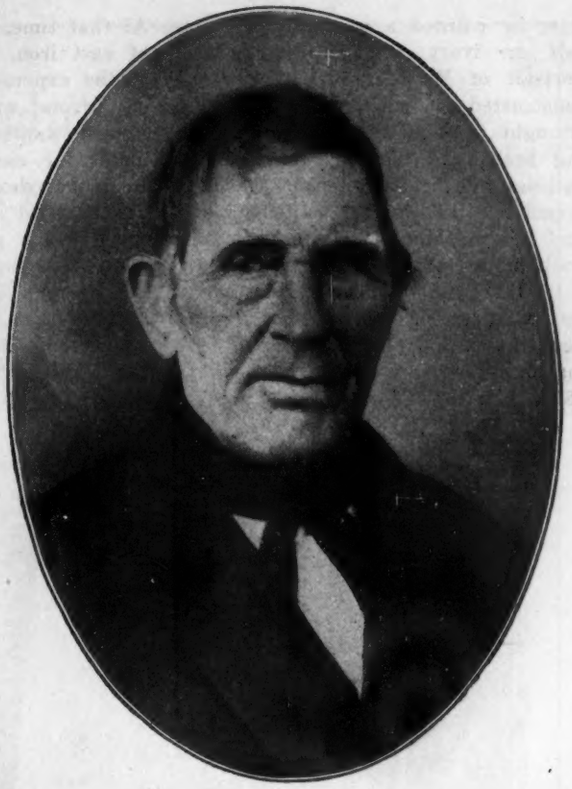
American Malleable First Made 100 Years Ago



Seth Boyden, Who Developed Black Heart Iron, Is Paid Tribute by Eastern Castings Plant Which He Established To Manufacture New Product—Career of Inventor Was Notable in Varied Lines —Sought Malleable for Use in Making Harness Hardware

By E. C. Kreutzberg

DISCOVERY of malleable iron was only an incident in the career of Seth Boyden. This fact was brought out at a dinner served at Newark, N. J., Jan. 27 by the Barlow Foundry, Inc., for the dual purpose of celebrating the rounding out of its 100 years of continuous existence and of marking the centennial anniversary of malleable, to which discovery the Barlow company owes its origin. In a letter quoted at the dinner, Thomas A. Edison said: "Seth Boyden was one of America's greatest inventors and one who never has received proper credit for his many great and practical inventions. They have been the basis of great industries which have spread over the entire world and given employment to millions of people."

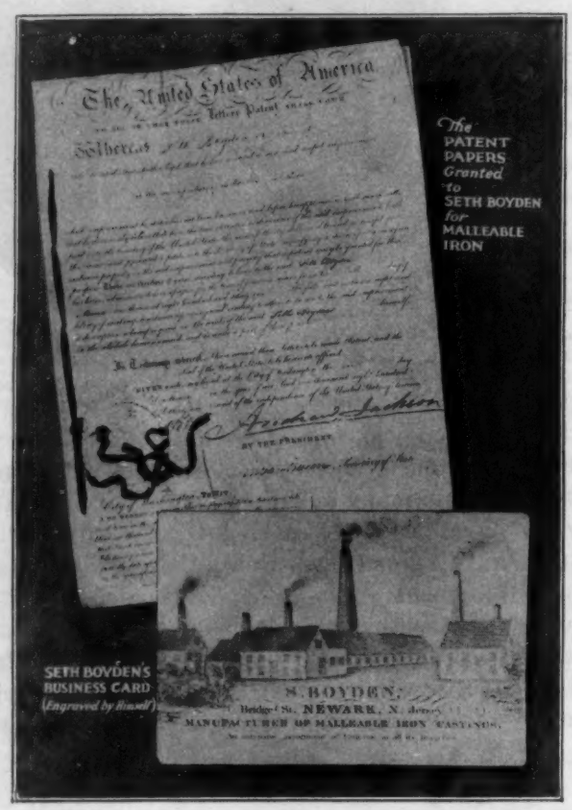
Seth Boyden was born at Foxborough, Mass., in 1788 and as a boy showed unusual traits. At 15 he repaired watches and made a telescope, a microscope, an airgun and a rifle. Three years

In 1914 the Barlow Foundry, Inc., moved into a modern plant. This illustration shows a view of the molding floor

later he painted a miniature of himself on ivory and he engraved a portrait of Washington. In 1810 he constructed a machine for making wrought iron nails, another for making brads and files and another for cutting and heading tacks. He next invented a machine for splitting hides, and this machine still is used to split bookbinders stock.

In 1815 he settled in Newark and opened a harness shop. The following year he placed his brad and tack machines in operation at Newark. In 1818 glazed and enameled leather first came to his attention. He analyzed the varnish on the leather and soon produced the article which ever since has been known as patent leather. Mr. Boyden did a good business in patent leather for those days. In 1822 he realized $4521 from its sale and by 1829 this business had increased to $20,341. But in 1831 he sold the patent leather factory as his interest had been extending in another direction. Incidentally, the manufacture of this product continues today one of Newark's important industries.

For about six years Boyden conducted experiments in an effort to develop malleable iron similar to that made in England by secret methods. At that time, owing to the brittleness of cast iron, it was necessary to go to the expense of forging many articles from wrought iron, and what Boyden wanted primarily was an ideal metal for casting harness hardware. In his boyhood, Boyden occasionally had assisted at a blast furnace operated by his grandfather and it happened that on one occasion, when the hearth was being repaired, he discovered that part of a cast iron bar which long had been imbedded in the hot brickwork had become annealed and could be worked on an anvil.


The United States of America
The PATENT PAPERS Granted to SETH BOYDEN for MALLEABLE IRON
SETH BOYDEN'S BUSINESS CARD (Engraved by Himself)
S. BOYDEN,
NEWARK, N. J.

A patent for malleable iron was granted to Seth Boyden on March 9, 1831, as shown by the patent papers above. An example of Boyden's versatility is the business card which he engraved himself

Boyden's experiments came to a successful conclusion in 1826. On July 4 of that year, while the citizens of Newark were celebrating Independence day in a nearby park he ran off his first cast of malleable. It is of interest to note that the Franklin Institute of Philadelphia in 1828 awarded to him a premium for an exhibit of buckles and other malleable castings. In describing an improved firing process which he developed at his malleable plant in 1831, Mr. Boyden said "the improvement consists in mixing rosin, pitch, or tar, with bituminous coal, and applying it as fuel for melting castings; the coal is pulverized or broken in pieces of a size suited to the furnace grate, and mixed with rosin, pitch, or tar, in a proportion as the intensive heat is desired, and applied in quantities, diminishing in proportion as the rosin is increased".

About 1837, Boyden, again interested in other directions, sold out the malleable business for $25,000 to a Boston firm which conducted the business as the Boston Malleable Cast Iron & Steel Co. Mr. Boyden then engaged in the manufacture of steam locomotives. He built the locomotives, "Orange" and "Essex" for the old Morris & Essex Railroad Co. These locomotives were built, respectively, in 1837 and 1838. In 1841 he built an engine for the Cardenas Railroad of Cuba and then went to Cuba to place it in operation. Boyden's interest then was diverted to steam engines and in 1845 he built an engine for the use of the Newark Lime & Cement Co., at a contract price of $1000. This engine now is in a museum in Newark. At that time he applied for a patent on a cut-off for steam engines, to be used in place of the throttle valve and to be connected with the governor. His application was rejected, however, because he neglected to send a model to the patent office with the result that his invention became common property.

In Gold Rush of 1849

The next subject to engage the attention of Mr. Boyden was that of reducing the zinc ores of New Jersey. He undertook this problem after others had failed on it and in 1848 he discovered an economical process for obtaining zinc from this ore. In 1849, Mr. Boyden caught the gold fever and went to California, returning to Newark the next year. It is of interest to note that such was Mr. Boyden's standing in the community that a celebration was held, and cannon fired, to welcome him back home. Soon after he discovered an inexpensive process of manufacturing Russia sheet iron.

About 1855 he practically retired and moved to Hilton, N. J., where he devoted his attention largely to agriculture. He soon became famous for the variety of strawberries which he developed. One of them was the famous Hilton strawberry of which 15 berries weighed 16 ounces, and which were distinguished for their flavor as well as size. Although practically retired, Mr. Boyden invented a metal which he called "oroide" which resembled gold and of which he made a watch case and spoons and knives. He developed a device for forming hat bodies. Boyden also made extensive

(*Concluded on Page* 399)

Flowers and Shrubs Brighten Industrial Grounds; Lighten Labor

EXECUTIVES of many manufacturing companies believe thoroughly that it is good policy from various standpoints to make their plants as clean, comfortable and as attractive in appearance as possible. The illustrations herewith show what has been done to beautify the large plant of the Birdsboro Steel Foundry & Machine Co. at Birdsboro, Pa. Instead of drab walls, the workmen are greeted by waving iris and huge cannas. They are welcomed by goldenglow, roses and flowers of many other varieties. During the winter months there are evergreen shrubs. The expense of this beautification is small and the benefits are considered great. The flower beds with their bright blossoms have been shown to help in building morale. They have an effect on the usual individual of making work seem somewhat easier and they help to dissipate gloom and discontent.

Flowers transform appearance of entrance way and blank walls.

Tests Show Modern Steel Excels That in Famous Blades of Damascus

By T. O. Court

PERSONS who take a mournful delight in pointing out the decadence of modern generations always fall back for support on a few well known popular beliefs. Why can't we harden copper now the way the ancients did? Why it is impossible to duplicate the Tyrian purple? Or, why doesn't the steel of today equal the iron of yesterday?

Truth Dispels Romance

These superstitions cannot be scotched in the minds of many persons, but it is interesting to investigate them. Usually it is found that of their meaty kernel only a shrivelled remnant remains. Such a superstition is that of the Damascus sword. Why can't we make them? What was the secret of the old armourer whereby he conferred on his blades the qualities of Excalibur itself?

It is no myth that these swords could be bent in a circle, point touching hilt, or that they could cut in two a woman's hair, floating in the wind, so keen was their edge. These facts have been demonstrated with museum specimens.

Reviews Sword Making

Investigations made by Professor Zschokke, of Munich, and recently published in the *Revue de Metalllurgie* throw new light on these swords and the steel from which they are made. In dealing the subject he reviews the manufacture of the steel in India, for which iron ore, bamboo-charcoal and green leaves of certain potent plants were put in a crucible of native clay. Heated in a charcoal fire, the ore was reduced to iron—or steel, rather for it absorbed carbon in the process—and ran into a small mass at the bottom. Slowly cooled, the metal was recovered and then heated and cooled again as many as five times, about a day being required to cool it. In these crude ingots the metal was carried on the backs of mules hundreds of miles to the arms-making centers in western Asia, where it was forged and fabricated. The forging was done with great care using light blows of the hammer and never heating the metal above a red heat, even though it was necessary to reheat frequently.

After this the blades were tempered and here again myth and supersition crept in, attributing to certain quenching media supernal power. Mysterious salt solutions, decoctions of herbs and oleaginous mixtures all had their place. The most spectacular method was when the artisan drew the sword from the charcoal embers and passed it without delay to a horseman, mounted and waiting. Putting the spurs to his horse, this man rode at a swift gallop, brandishing the radiant weapon in quick circles until it was cooled by the wind.

Damascening Process Secretive

After polishing the cold blade it was ready for the damascening process which also was shrouded in mystery. A secret substance was dissolved in water and the sword blade immersed in the solution. Long kept dark, it is not known that the etching agent was a lemon yellow mineral known as "Zag" and found locally. It consisted of over 50 per cent iron sulphate and equal results can be obtained with a dilute solution of this salt, or even nitric acid. On removal from this bath the bronzed surface of the metal was found to be etched with alternate light and dark bands of the damascening, taken as an index of the value of the weapon. The designs were classed in ascending order as composed of straight bands, short straight bands mixed with curves, curved bands, spiderweb design, and finally the ladder. The last named is considered valuable and consists in transversal or oblique repetitions of a minor design repeated every inch or two of length. An especially good example of such damascening is usually referred to as "the ladder of Mohammed."

It should be pointed out that this damascening is not similar, except remotely in appearance, to the designs found in modern shot gun barrels, etc. These are produced by manufacturing the barrel from a bar made up by welding together alternate bars of iron or steel of different carbon contents and then etching the final product with acid. In fact, for some of the cheaper barrels, the makers simply etch the design on ordinary gun steel and dispense with the expensive welding process. True damascening, however, is inherent in the steel and owes its origin to the repeated heatings and slow coolings in the furnace. This results in a segregation, or migration, of the carbon in the steel to certain parts so that there will be some portions deficient in carbon and some with an excess. Under the action of the damascening, or etching agent the steel with more carbon takes on a darker color.

Test Old Swords

Two European collectors and experts, agreeing that accurate data on the subject were meager and subject to error, became interested in a more scientific test and enlisted the aid of Professor Zschokke. Six Damascus blades four curved Oriental sabres and two daggers were donated from the collection of M. Moser. One sword carried on its .at the engraved signature of Essad Ullah, famous among ancient armourers. For the purposes of comparison, two modern sword blades were obtained in Solingen; one of the present day homogeneous steel showing no damascening the other a blade of Damascus type welded up by one of the cold sword makers who still persist and practice their inherited art on rare occasions to supply a connoisseur or, strange to say, for duellists.

These eight pieces were subjected to chemical analysis, and hardness test, beside being examined microscopically. The ordinary test for tensile strength involves the use of a piece of metal larger than could be spared, so as a compromise the strength was determined by a bending test.

The results were convincing and comforting—to the believer in today. None of the samples of the genuine blade had as good damascening as that done by the old German, which was a perfect example of the ladder of Mohammed . The two modern blades under the Brinell test both proved to be quite considerably harder than the ancients. That alone proves nothing, but combined with this hardness they showed a strength, as indicated by resistance to bending from 50 to 100 per cent greater. With one exception, they required more than five times as much energy to bend and even then bent through an angle about twice as great before failing.

Modern practice approves of a content of carbon in sword steel which will combine the greatest strength, hardness and ductility. This is found

at or near what is called the "euctecoid point" which corresponds to a carbon content of approximately 0.85 per cent. While deviations above or below this point are not fatal in consequence, it is best to adhere fairly closely to the rule. Two modern swords fall short of this mark by a few hundredths of a per cent but the Damascus blades averaged almost twice the desired amount. There was one exception. It was the one noted previously which appeared under test to be nearest the modern swords in quality and to be as close to them in carbon as any steel can be made.

Other interesting features of the analysis showed that neither the old or new steels carried any nickel, chrome, vanadium or tungsten. This does away with the suggestion sometimes advanced that Damascus steel was made from iron found in meteors, because heaven-sent meteors, like good alloy steels, always contain nickel. Phosphorus has a detrimental effect on steel and renders it brittle under shock, a bad feature in a sword, yet these old steels carried about three times as much as is today allowed in good grades of commercial steel.

Concluding, our authority expresses as his opinion that the modern blades are not only more flexible but, at the same time, harder than the true Damascus blade, and more resistant to blows. It is concedable that the old weapons were capable of taking a keener edge on account of the higher carbon and that this, coupled with the fact that the swordsmen of the East cut rather than stab or club, renders the brittleness of the steel of less import that we of today are making better steel than the old armourers ever attempted to make and making it in quantities thousands of times larger. Further, if necessary, we could make better swords and more of them. So, beautiful masterpiece of individual handicraft though it is, the blade of old Damascus must take its place with the hardened copper chisel of the pyramid builder.

Equipment Builders Elect

Foundry Equipment Manufacturers association at its recent meeting at Cleveland elected officers for 1926 S. T. Johnston, S. Obermayer Co., Chicago, was chosen president, T. W. Pangborn, Pangborn Corp., Hagerstown, Md., vice president; H. Cole Estep, Penton Publishing Co., Cleveland, secretary and treasurer. T. W. Pangborn was re-elected director for three years. The next meeting will be held at French Lick Springs, Ind., April 22-23.

New Theory of Hardening Applies to Ferrous and Nonferrous Metals

By D. Hanson

RECENT work on the metallurgy of ferrous and nonferrous metals has given a more complete understanding of hardening.

Metals are built up of forming a cubic lattice resulting in the building up of crystals. The various atoms form planes through the crystals and deformation is effected by the planes of atoms sliding bodily over one another. In the pure metals where the lattice is perfect, resistance goes slowly because of the softness of the metal. Eventually the sliding movement may be continued until breakage results from the planes sliding completely away. The break is effected by shear and not by separation of the grains. Anything tending to make the slipping more difficult tends to make the metal harder. Modern research has established the theory that anything causing resistance to deformatic slip will gradually produce hardness. Hardness, whether by alloying or heat treatment, is the result of one of three processes: Either by forming solid solutions; by mixing with the metal crystals having hard constituents, such as intermetallic compounds; or by controlling the state of division of the crystal in the material.

Susceptible To Heat Treatment

The control of hardness by the control of the sub-division of constituents probably is the most important cause of hardness and is most suceptible to heat treatment and to regulation in many of the commonly used alloys. In a certain number of cases it can be controlled by heat treatment and when the constitution of the alloy varies at different temperatures it is possible by regulating the conditions of the annealing to vary the state of division of the constituents. If one of the constituents exists at high temperature it may decompose any of the weak constituents at a low temperature and so the structure can be regulated by controlling the conditions of heating and cooling. Therefore changes in the type of crystalline lattice can be effected.

This aspect of the subject can be illustrated by the solubility of copper and aluminum and its variation with change of temperature. Normally in the cooling down from 500 to 300 degrees Cent. a considerable quantity of copper will go out of solution in the aluminum, and by controlling the conditions under which the copper separates from aluminum the hardness of the alloy can be varied.

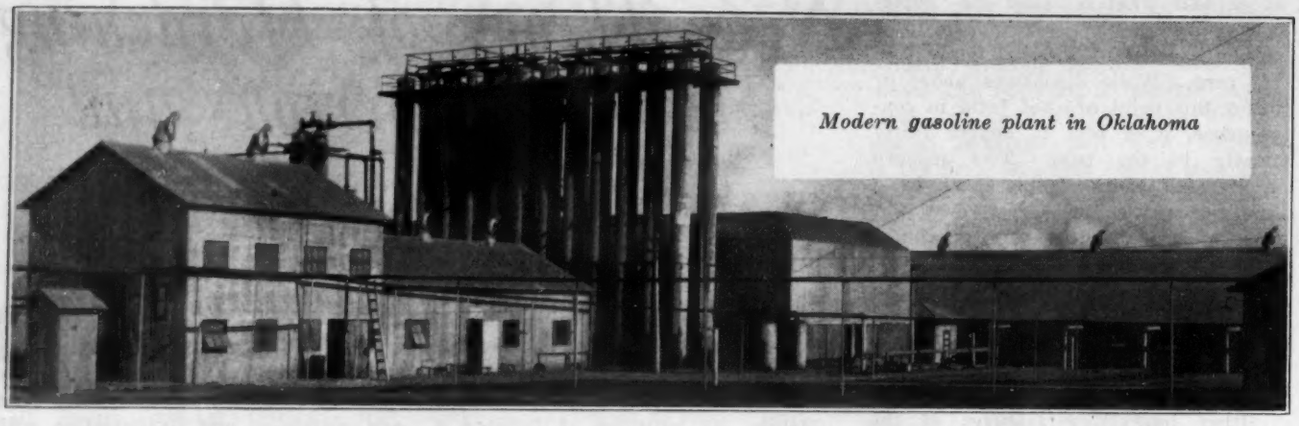
If the rate of cooling be quick small crystals are formed and by slow cooling a mixture of copper and aluminum becomes harder if allowed to remain undisturbed for some time, mainly because the crystals become more finely distributed.

Also Applies to Steel

The theory also can be applied to steel. While steel hardening can be explained in the same way, steels differ from nonferrous metals in that the basis of the metal usually undergoes a definite alltrophic change at 900 degrees Cent., which is accompanied by a market difference in the solubility of the carbon. At 900 degrees Cent. about 1 per cent of carbon can be held in the iron. But if it is cooled rapidly at about 700 degrees Cent. the solubility falls suddenly to almost nothing. That change in the crystals of the iron and the sudden change in the solubility of the carbon must be considered in any theory of the hardness of the steel.

Crystals in the finest steels are very fine, workers in X-rays estimating that the crystals may only be about 100 atoms across and a row of 1000 atoms of iron would not be visible under the microscope, or barely visible. If the crystals are about one-tenth smaller than can be seen under the highest powers of the microscope, that is sufficient to account for a considerable degree of hardness. If with that type of material a considerable degree of supersaturation with carbon is present, or alternatively, the hard fine particles are mixed with a hard constituent like iron carbide, a considerable degree of hardness must be expected to be encountered.

Abstracted from a paper presented at a joint meeting of the Staffordshire Iron and Steel institute and Birmingham section of the Institute of Metals at Birmingham, Nov. 10, 1925. The author is associated with the National Physical Laboratory.



Modern gasoline plant in Oklahoma

Steel Plays Larger Part in Gasoline Manufacture

By Dudley W. Moore

IN THE last ten years the natural gasoline industry has grown to one of commanding importance, with about $150,000,000 invested in the business. Keeping pace with its marvelous growth has been the evolution of equipment to meet the increased demand for efficiency in the quality and quantity of the product. This need for equipment entails the use of large tonnages of iron and steel.

Although the industry dates back about 20 years it was only within the last decade that the building of plants began on an active scale, and only within the last five years has the product been placed on a stable basis.

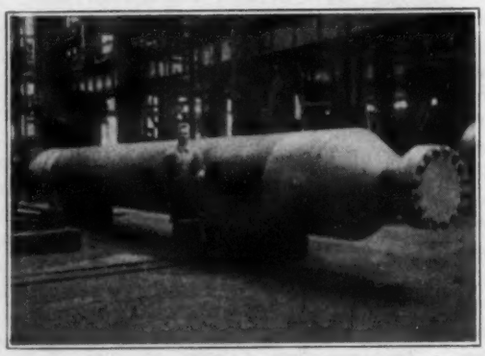
Remarkable efficiency in equipment designed to recover gasoline from natural gas has been attained in the last few years. The process of obtaining a high-grade product from gas formerly allowed to blow off in the air is one of the important achievements of industry. This has been made possible by the evolution of machinery and equipment. In the early experimental days it was found that the principle of equipment used for refining oils could with variations be applied to the manufacture of gasoline. The mining industry also was called on to furnish some of the ideas in equipment, notably the air compressor. Little by little, improvements were made, the result being the development of machinery especially adapted to the operation of gasoline plants. The absorption method of extracting gasoline from gas by using mineral seal oil as an absorbing medium, has come into general use within the last years, replacing the old compression method. The charcoal process, used extensively in the East, is just being introduced in the Mid-Continent and California fields. The latter is a comparatively new method but is expected to develop on a large scale. Some plants are beginning to combine all three methods in one plant. Engineers as a rule look with favor on the combination type of plant.

Stills used in these processes are made of steel and in 1925, 40,000 to 50,000 tons was needed for their manufacture. It was a year of low consumption for this purpose, while the present year gives promise of considerable improvement, with a probable requirement of 65,000 to 75,000 tons. One fabricator recently placed an order for 10,000 tons for the first quarter.

The steel is mainly in the form of high-grade boiler plate, although some progress has been made in forging stills out of ingots. Until a year ago the plates generally used were 1¼ to 1½-inch thick, and the stills were 8 to 10 feet in diameter, 20 to 25 feet long. Such stills weighed approximately 30 tons. A demand then developed for 2 to 2½-inch plates for stills of about 6 feet diameter, and length of 16 feet. Stills using plates 2 inches in diameter weigh approximately 50 tons.

As the thickness of the plates increased, welding came into more general use for their fabrication, as this was found to be more practical in some instances than the use of long rivets. Plates up to 3 and 3½ inches thick now are used, with joints welded.

The ordinary "life" of the earlier type of stills was three to four months, as high pressures, up to 1600 to 1700 pounds per square inch, temperatures up to 700 to 900 degrees Fahr., and chemical reactions in the "cracking" process tended to disintegrate the steel. The stills are used in successive steps of the process, requiring lower pressures and temperatures. The thinner gages of plates were bent in a circle so that their length formed the circumferenc of the still, in one piece. It was impracticable to bend the heavier plates in such a way, and smaller plates had to be used. The tendency toward thicker walls led to the forging of stills by piercing ingots specially poured, up to 125 tons in weight, and then hammering the ingot over a mandrel.



Forged gasoline reaction cylinder, or still. This type now is being made with walls 5½ inches thick

The Midland Steel Co. in its plant at Nicetown, Pa., now is making some of these stills with walls 5½ inches thick, length 44 feet, 9¼ inches, and weight 35 tons, to withstand a hydrostatic pressure of 2000 pounds per square inch. It has an order for making heavier stills. The Bethlehem Steel Co. also makes forged stills. Some used in this country have been imported from the Krupps. Krupps have made forged stills with walls 6 inches thick.

In a general sense there has been little change in the engine or compressor equipment of gasoline plants. The greater use of this equipment, however, is notable. The little one-unit plant of the early days handled about 20,000 feet of gas a day as compared with modern plants with as many as 25 units handling 40,000,000 feet of gas a day. Where the original two-stages air compressors handled 100,000 feet of air or gas a day, this unit now handles anywhere from 500,000 to 1,000,000 feet.

As gasoline plants began to be more permanent in character and the amount of gas handled was increased, larger engines came to be used. The 80 horsepower type for ordinary work and the 160 horsepower type for heavier work now are generally employed. Some compressor units are driven by electric motors that have proven successful and will be an important factor in the future equipment of gasoline plants.

Seeks Funds To Develop Science Research

The National Academy of Sciences, Washington, has announced that it has appealed to a body of prominent public men to join with leading scientists of the country in an endeavor to secure an annual income of at least $2,000,000 for the furtherance of research in pure science. With these resources it is hoped to establish a number of national research professorships and to co-operate in other ways with universities and other institutions in support of fundamental research in the mathematical, physical and biological sciences.

It is pointed out that the problem is not to find competent men for the work so much as to make these posts so attractive that the ablest men will seek and hold them permanently. This can be done only by providing adequate salaries, freedom from too much teaching or administration, necessary instruments and apparatus, and skilled assistants to perform the extensive routine operations involved. The Rockefeller foundation and the General Education board, with 100 such fellowships, are bringing into research today the best advanced students in the sciences.

The Academy has created a special board of trustees of the National Research endowment for these funds, and Prof. Albert A. Michelson, president of the National Academy of Sciences, has been selected for the chairmanship of the board.

Bronze Welding of Pipe Gives Strong Bond

Bronze welding of cast iron pipe is a brazing proposition, H. Y. Carson, research engineer, American Cast Iron Pipe Co., Birmingham, Ala., told members of the Gas Products association at their twelfth annual midwinter convention here. The bond is stronger than the metal itself, provided the metal has not been burned, he declared. In seeking to avoid penetration, bronze welding of cast iron pipe is quite the opposite of the joining of steel pipe, Mr. Carson maintained.

Other speakers at the convention, which was the best attended midwinter one on record, included Carl Naylor, president, Naylor Spiral Pipe Co., Chicago, who explained the welding of cold rolled strip ends in making spiral pipe. Joseph B. Kimmel, Milwaukee Electric Railway & Light Co., Milwaukee, told how the gas torch is used by his company in rail bonding despite the cheapness and availability of electricity.

Welding at the Hawthorne works of the Western Electric Co., Chicago, was explained by E. L. Swangren. Col. O. E. Engler, Ballbach Oxygen Co., Omaha, Nebr., was toastmaster at the convention Friday night which included the three-day meet. The association is an organization of oxygen producers, with affiliated membership by the producers of acetylene and other fuel gases used in oxy-acetylene welding and cutting.

To Celebrate Telephone's Fiftieth Anniversary

Great Britain's recent celebration of the one-hundredth anniversary of the locomotive made the world reflect on the comparative youth of some great inventions; now comes the American Telephone & Telegraph Co. with a reminder that the telephone was born only 50 years ago, the company preparing to celebrate that event on March 7. It was on March 7, 1876 that Prof. Bell was granted his original patent, and in October of the same year the first outdoor trial was made, Prof. Bell talking over two miles of wire. Today a telephone call can be made from the Catalina islands, off the shore of California, to Havana, 5500 miles.

The passing of 50 years presents a story of remarkable progress. Today the Bell System's lines connect more than 16,000,000 instruments, with a total wire mileage of 44,500,000 miles. Over these wires there was an average of 46,000,000 telephone calls a day during 1925, of which the daily average of toll and long distance calls was approximately 2,400,000. Nearly 300,000 employes are engaged in this service.

Issues Descriptive Leaflet on Silicon Ores

Because of an increasing interest blast furnace operators generally are taking in the use of silicious ores, Clement K. Quinn & Co., Duluth and Cleveland, have prepared a leaflet regarding them, especially the company's Kruse grade, a soft ore, and Empire, a hard ore. The silicious ores are mined chiefly in a limited district on the Marquette range. Producers have experienced a larger demand for them, and have anticipated heavier shipments. It is said that most furnaces so situated that freight rates from lower lake ports will permit their use now include a certain though varying proportion of such ores in their regular mixtures. The leaflet issued by the Quinn company contains complete analyses of its soft and hard, true silicious type of ores.

Appoint Fund Directors

The board of directors of the Daniel Guggenheim $2,500,000 fund for promotion of aeronautics has been selected, and will include the following: Orville Wright, Dayton, O.; Dwight W. Morrow, J. P. Morgan & Co.; Gen. George W. Goethals, chief engineer of Panama canal; Rear Admiral H. I. Cone, retired, former chief engineer of the navy and commander of naval aviation forces in foreign service; Elihu Root; Prof. A. A. Michelson, University of Chicago, Chicago; John D. Ryan, chairman, Anaconda Copper Mining Co.; Harry F. Guggenheim, son of Daniel Guggenheim; F. Trubee Davison, chairman, national crime commission, and Dr. William F. Durand, Leland Stanford university, Stanford University, California.

Chicago Steel Car Co., Chicago, has changed its name to the Gibson Car & Mfg. Co., and has decreased its capital from $325,000 to $100,000. Butler, Lamb, Foster & Pope, Monadnock block, are correspondents.

Installs Mill Drive in 19 Days

Buffalo Steelmaker Substitutes Motor for Equipment That Had Been in Service Since 1906—Modern Building Replaces Old Structure—Construction Involved Many Difficulties—Engineering Details Are Presented

INSTALLATION of the new electric blooming mill drive recently put in operation by the Donner Steel Co. Inc., Buffalo, stands out as a unique accomplishment in the steel industry. The new drive replaces the 48 x 60-inch simple, twin cylinder horizontal engine formerly used in driving the 36-inch blooming mill at the Buffalo works. This engine had been in service since 1906 and was operated noncondensing, by steam furnished in part from a battery of coal-fired boilers in one boiler house and from blast furnace gas fired boilers.

Since the blooming mill in this plant is most essential in the production of alloy and special steels made to customers' specifictions, it was important that the change be made with a minimum shutdown. After carefully planning every step and immediately upon receipt of the last car with electrical equipment from the factory, the mill was shut down on July 2, 1925, the old drive removed and again put in operation with the new drive in its place on July 20. the time of the cessation from the rolling of the last ingot with steam to the rolling of the first ingot with electricity was 18½ days.

Building Was Inadequate

The engine was located in one end of a lean-to-building known as No. 1 power house, which is adjacent to the blooming mill building proper and houses hydraulic pumps, boiler feedwater pumps, accumulators, air compressors and other power house equipment. This building being rather narrow and served by a low 10-ton electric overhead traveling crane, was found entirely inadequate for the purpose of housing the new drive. It, therefore, became necessary to erect a new building of ample size, with adequate crane facilities, to serve the needs of the reversing motor and auxiliaries, in place of a portion of the existing lean-to over the engine.

The construction of the new building carried with it certain difficulties not ordinarily encountered in work of this character. Operation of the mill, before the final shut-down, could not be interrupted, in spite of the frequent occasions for interference with construction. The large steam separator together with steam piping and exhaust piping serving the engine, as well as accumulators, hydraulic pumps and electrical apparatus in and near the engine room and used in conjunction with the mill, had to be moved to clear the site for foundations and walls of the new building.

Piling Is Used

The new building was designed approximately 7 feet wider than the power house lean-to, to locate its east wall outside of the existing building. The foundation for this wall on account of having to carry the crane runway columns was piled. Oak piles first were driven to refusal. The pile driver employed was of special construction for installation in the limited space between the existing power house building and a brick boiler house stack. While the excavation and concrete work for the east wall was in progress the end wall of the old power house building, together with roof and east wall in the last bay just south of the engine was removed to clear the site for the foundation and end wall of the new building, and for the switchboard basement which extends across the south end. Meanwhile, the brick wall separating the blooming mill building from No. 1 power house was removed in five bays opposite the engine to expose the steel work of the mill building and to later permit the erection of a new partition wall, forming also the west wall of the new drive room.

After the east and south wall concrete foundations were in place, the erection of a new partition wall, for the new building was started. Column extensions were added to the mill building columns for supporting the west ends of the drive building roof trusses about 5 feet above the eave of the mill building. The east columns and roof trusses of the new building then were placed in their respective positions by the use of a hand car on a track supported on the roof of the lean-to and raised by a portable gin pole, also supported from the same roof. Sufficient space was not available to erect the steel work from the ground by using ordinary erecting equipment.

The roof of the new building was placed and two more bays of the old power house building, beginning at the south end, then were taken down. The mill building columns were reinforced on the drive side and the new girders for the crane to serve the new drive, erected in two bays. A 75-ton open-hearth pit crane, which had been overhauled and converted into a single hook crane to serve the motor drive building, next was placed on the runway in the two south bays, and a fourth bay of the old building taken down, which permitted the further erection of another or third bay of the new crane runway girders. This procedure was carried on until the entire building was removed and the complete new runway erected. The engine at all times was covered either by the 75-ton crane of the new building or the 10-ton crane of the old power house, or both if needed in the bay between them.

The tearing down of the old building and subsequent erection of new members was done under cover of the roof of the new building, while the engine was operating on regular mill schedule. Use was made of the new roof trusses for fastening rigging used in dismantling and erection. Following this, the laying of brick for the east and south walls was started and along with the south wall the erection of the switchboard gallery, which was followed by erecting the switchboards and connecting wiring. Meanwhile, foundations for the north wall of the drive room were put in and the concrete work for the underground air ducts completed as far as possible.

Engine Kept In Operation

The new work up to this point was carried on around and over the top of the engine while operating, without a single shut-down, except for the regular Sunday cessation of operations. The construction work was carried on under more or less difficult conditions. The engine, being badly out of balance, put everything around in vibration to such an extent as to make it necessary to stop certain parts of the work at times, and to require more than extraordinary bracing of forms for concrete, scaffolds and various members

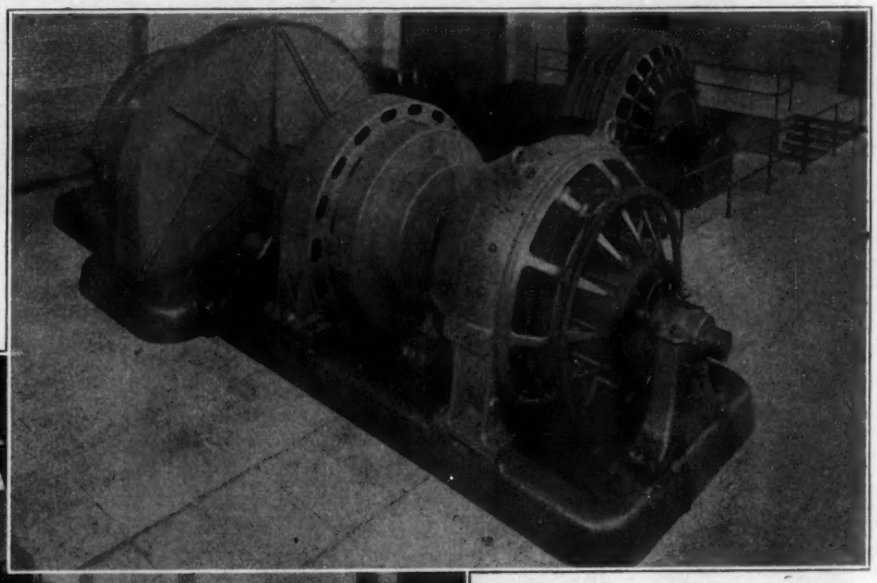
of the building, while under construction. No switching tracks were available near the site to facilitate handling materials. A limited amount of space across the end and along one side of the building was available in which construction work could be carried on.

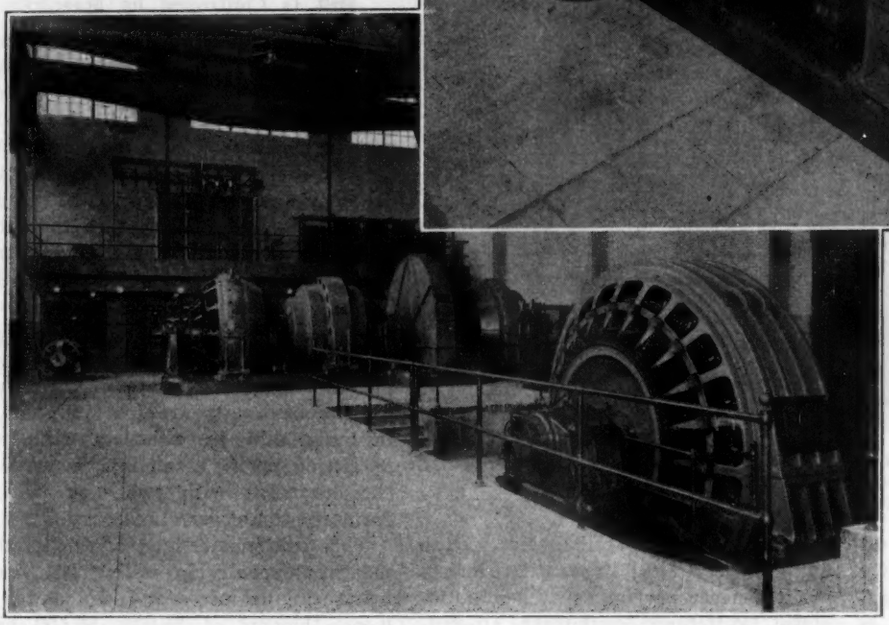
Every preparation was made for the final shut-down to effect the change to the electrical drive quickly. A temporary construction track elevated on a trestle across the north end of the drive building, between the engine foundation and the north wall, was placed a few days before the mill was shut down, so that it could be connected quickly to a temporary spur track, placed at the same time across the mill from a track in the mold yard. This track was placed over the mill tables while the mill was shut down. The trestle was provided to make the north end of the engine foundation accessible for dynamiting. A concrete drill sharpener of the Leyner type and a tempering furnace were installed temporarily near the site to keep the drills in good condition.

The engine with its auxiliaries and steam piping, weighing nearly a million pounds, was dismantled and removed completely in 22¾ hours after shutting down. Drilling and dynamiting of the engine foundation for new foundations for the motor-generator set and reversing motor was started simultaneously. The motor-generator set being placed across the south end of the engine foundation sufficiently far away from the reversing motor, permitted concentration on the foundation for this set and enabled its completion earlier than the foundation for the reversing motor. Erection of the motor-generator set was started seven days after shutting down. This was followed by completing the concrete work for the exciter set, slip regulator, conduit tunnel between switchboard basement and motor-generator set, and for the buss bar cellar between the motor-generator set and reversing motor. The foundation for the reversing motor next was completed. This permitted the starting of erection of the reversing motor 12 days after shutting down. The wiring, together with setting up of auxiliaries was carried along rapidly to permit ample time for turning over and adjusting the main units.

In preparing the foundation for the reversing motor, the engine foundation was dynamited out to a depth of about 11 feet. Structural beams were anchored at this elevation into the remaining existing foundation below, by six of the engine foundation bolts, which were shortened for this purpose. These extend into the existing concrete to a further depth of about 10 feet. Eight of the motor anchor bolts, not including the four principal bolts at the drive and thrust bearing end, were secured to these beams for bolting down the motor. The four bolts at the drive end bearing were anchored down through the new concrete into the old engine foundation below and fastened in the tunnels of the old foundation at a depth of about 20 feet below the motor base. The new concrete for the reversing motor foundation was poured of cement up to about 15 inches of the top and finished with concrete of a special cement. This also was done with the foundation of the motor-generator set. The aim in doing this was to obtain a sufficiently hard surface to permit erection of equipment in the shortest time after pouring of concrete was completed. Erection of the motor-generator set and reversing motor was started about 26 hours after their respective foundations were poured.

The mill machinery was completely overhauled during the shut-down, including certain changes in the roll stand to enable the use of larger blooming rolls and new universal spindles between pinions and mill. The pinion housing was machine altered for new pinions of larger diameter, and equipped with new bearings designed for lubrication by splash from the pinion teeth. The pinion teeth, bearings and universal ends of



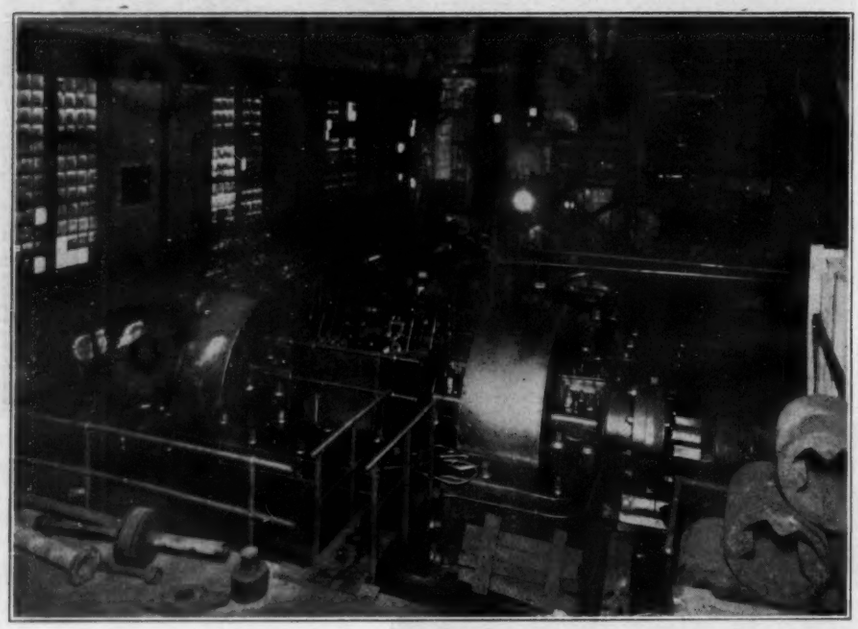


(ABOVE) A 40-TON FLYWHEEL IS MOUNTED BETWEEN THE INDUCTION MOTOR AND ONE GENERATOR OF THE MOTOR-GENERATOR SET

(LEFT) INTERIOR OF THE NEW BUILDING OF THE DONNER STEEL CO., INC., BUFFALO WHICH HOUSES THE BLOOMING MILL MOTOR

lead and mill spindles are lubricated by oil from the bath in pinion housing, into which the pinion teeth dip. A new operator's pulpit was erected which is of plate and structural steel construction and entirely enclosed. Steel sash with clear wire glass enclosed three sides of the pulpit with bullet proof plate glass extending across the entire front, to give a full view of mill to the operatives and at the same time offer protection from flying scale. The pulpit is ventilated by washed air from the air washers.

The reversing motor consists of a single unit shunt-wound machine operating on 750 volts direct current having a speed range of 0 to 120 revolutions per minute in both directions. Its continuous capacity based on 50 degrees Cent. temperature rise is 4000 horsepower. It is direct connected to the pinion housing of the mill through a universal lead spindle. The motor is semienclosed and ventilated by washed air.



NO. 1 POWER HOUSE SHOWING BLOOMING MILL TWIN-CYLINDER STEAM ENGINE WHICH HAD BEEN IN SERVICE SINCE 1906. THIS VIEW WAS TAKEN A FEW DAYS BEFORE RECONSTRUCTION WAS UNDERTAKEN

Voltage Is Stepped Down

The motor-generator set consists of two 1800 kilowatt shunt-wound generators in parallel, driven by a 3000 horsepower, 500 revolutions per minute sychronous high speed, slip-ring induction motor. A 40-ton flywheel is mounted between the induction motor and one of the generators, while the other generator is direct connected to the motor on the opposite end. These units all supported on a common base plate and are all semienclosed for the purpose of forced ventilation by washed air, with provision for self ventilation when required.

The excitation for the direct-current generators and reversing motor is furnished by a 100-kilowatt motor-generator set running at 750 revolutions per minute. Three 75-kilowatt-ampere single-phase transformers with 115-volt taps for starting are used in stepping down the 2300-volt current to 230 volts for power on the auxiliaries. A liquid-slip regulator is used for automatically regulating the amount of resistance in the secordary circuit of the induction motor to permit an exchange of energy between motor and flywheel. This regulator is arranged for use in starting the set and for dissipating the slip energy. The remainder of the auxiliary electrical apparatus consists of the necessary oil switches, automatic switching equipment, instruments, breakers, etc., for the complete installation.

Washed air is furnished by two air washers each having a capacity of 30,000 cubic feet of air a minute. Normally one washer furnishes air for the reversing motor, while the other is used in ventilating the motor and generators of the motor-generator set. Provisions have been made, by inter-connecting the air ducts leading from each of these washers, to permit of the use of the washer normally on the motor-generator set for ventilating the reversing motor in case of trouble with the other unit. The washers, fans and pumps are located in No. 1 power house, just outside of the motor-drive room, and are arranged to take in outside air or recirculate air from the motor room or both, as desired. The starting controls for motors driving the fans and pumps are interlocked with the main starting control on the large units, so that the latter cannot be operated without forced ventilation.

The switchboards and equipment are placed across the south end of the motor-drive room. The low-voltage starting, contactor and instrument panels for the reversing equipment, together with automatic switchboards for the mill auxiliary motors are on the main motor-drive room floor. The high-tension oil switches are placed at one end of a gallery over the switchboards. The direct-current resistance mounted on racks is placed on the other end of this gallery. The 75 kilovolt-ampere single-phase transformers and a series transformer are placed in a cellar under the switchboard as a protection against fire in case of the loss of one of these.

Mill Is Controlled by Masters

The operation of the reversing motor is entirely in the hands of the roller through a manually controlled master placed in the pulpit. This master, together with a single similar master controlling the approach and delivery tables on the mill, is so placed as to enable him to operate the mill and tables with his right hand. Another similar master conveniently placed gives him control of the screw-down with his left hand. The manipulator is hand operated from the pulpit by another operator. This arrangement allows freedom in operating the mill in either a standing or sitting position and makes possible the operation with two men, where formerly three were necessary.

The equipment has an estimated monthly capacity in rolling 21½-inch square ingots into 4 x 4, 5½ and 9 x 9-inch blooms of 35,000, 50,000 and 62,000 tons respectively.

The complete electrical equipment was furnished and erected, including wiring, by the General Electric Co., Schenectady, N. Y. The new universal spindles, pinions and bloom rolls were furnished by the Mesta Machine Co., Pittsburgh. The structural steel for the building was furnished and erected by the Lackawanna Steel Construction Co., Buffalo. The necessary piling was driven by the Great Lakes Dredge & Dock Co., Buffalo. All other work, including the rearrangement of equipment, dismantling of engine, foundations, brickwork and miscellaneous work, incling engineering, was executed by the organization of the Donner Steel Co. Inc.

Making High Grade Steel-V

Log of Carefully Supervised Heat of High Speed Steel Shows Every Precaution Taken, Yet Mysterious Cracks Appear — Why?

By John A. Coyle

IN THE last article of this series published in the issue of Jan. 28, developments in the manufacture of high speed steel were traced and some of the principal problems encountered by the producer were outlined.

In order to give a more intimate view of the many minute operating details which affect the quality of the product and at the same time suggest the uncertain character of the procedure, the history of a heat of high speed steel is presented here with full information on analyses, practice, etc.

The following is abstracted from a hypothetical question formulated from actual facts, prepared and written in 1908 and submitted at that time to many of the leading tool steel makers for their study. While written nearly 20 years ago, it still is appropriate in that it indicates that even under the most expert supervision, difficulties may arise during the process of manufacture which cannot be explained by present knowledge or experience.

A heat of high speed steel was made from the mixture shown in the accompanying table. The charge consisted of high speed steel scrap, Swedish melting bar, Swedish scrap, tungsten powder, ferrochrome, ferromanganese, ferrovanadium, and a quantity of brick dust. This charge, weighing 103¾ pounds, was carefully packed in standard No. 60 graphite crucibles (new pots, first heaters and second heaters respectively and alternately). The crucibles were placed in an 18-pot furnace fired with natural gas and equipped with the checker work or regenerative chambers of a 30-pot furnace, thus requiring but little air in admixture with the gas. The average time of heats was about 5¼ hours. Ferrovanadium was added to the middle six of the 18 pots, namely, the seventh to twelfth pots, inclusive, 20 to 30 minutes before drawing the heat.

The steel was teemed in a perfect fluid state with mirror-like surface and without lumps or streaks into graphite lined ladles, which had been thoroughly heated with gas under air pressure. The heating of the ladles lasted for an average time of about 8 hours and was discontinued within 45 seconds of the time when teeming commenced. The metal was poured from the ladle into cast iron molds according to the best practice and with nothing but the flux remaining. Immediately prior to casting the metal into the molds, they had a normal temperature as a result of preceding heats. The ingots were top cast from a graphite nozzle and the flow was controlled by a graphite stopper at the end of an iron goose-neck, covered with clay sleeves. The molds were 6 inches square and the average weight of ingots was about 425 pounds.

The ingots were not allowed to cool in the molds, but were simply permitted to solidify or set sufficiently to permit stripping. After stripping the ingots were taken to a grinder while still hot where slight fins caused by the joints of the mold were re-

Next Article Is on Saw Steel

THE accompanying article is supplementary to the last installment on high speed steel, which appeared in the issue of Jan. 28. The first of the series was published Dec. 10; the second on obligation of the purchases of fine steel, was in the issue of Dec 24; and the third, dealing with general considerations of fine steel manufacture appeared in the Jan. 14 issue.

Eight or more additional articles, dealing largely with various grades of fine steel, will appear at intervals of two weeks. The author, John A. Coyle, consulting engineer, Pittsburgh, writes from an experience of 25 years in the industry—EDITORS.

moved. After this operation the ingots while still hot or warm were charged into a natural gas furnace, cooled down for the purpose of preparing for cogging under a 3-ton steam hammer into 4-inch square billets. At no time were the ingots permitted to come in contact with water, moisture, earth floor or iron floor plates, but were laid upon the edges of iron angles provided for the purpose.

In cogging the ingots, care was taken to see that the heat of the furnace was uniform and that it was equally distributed throughout each ingot. It was also observed that under the impact of the hammer blows the steel, while dense and tough was reduced uniformly and evenly, the heat following each hammer blow, this being an evidence of homogeneity. No seams or checks appeared.

The cogged ingot while hot was nicked on opposite sides to permit inspection and breaking into billet lengths. As in the case of the ingots from the furnace the billets were not permitted to come in contact with water or other moisture, but were placed on the edges of iron angles which had been preheated. On inspection of the fracture of the cogged ingot, no sign of seam, strain or checking appeared and the fracture was as it should be according to the best practice.

Recogging 4-inch Billets

The next step was to recog the 4-inch square cogged billets to 2½-inch square, and to flatten the corners slightly quarter-octagonwise so as to preclude checking in the heating of the sharp corners. The billets were charged cold into a cold natural gas heating furnace, and brought up to heat with the furnace for recogging under a 2500-pound hammer. The ends of the 2½-inch quarter-octagon recogged billets were nicked for inspection and as in the case of the ingots and cogged billets were laid on the edges of angle irons. Inspection of the nicked ends showed the billets to be sound and free from any indication of seams, strains or checks.

Recogged billets from the 2500-pound hammer were charged again into a natural gas fired billet heating furnace at the 12-inch mill for further cogging into small square billets to suit the size of a finished bar. The recogged billets were first rounded in chill grooves, then reheated and squared in steel grooves, and inspected on all of their corners to detect the presence or absence of checks or cracks. On examination the condition was found ideal and no checks or cracks were present. The billets were broken to show fracture and again it was found that the metal was sound and free from indications of seams, strains, or checks.

Next the billets were heated in a natural gas fired heating furnace, preparatory to finishing to bars on a 10-inch mill. The billets were roughed in sand grooves, hand rolled to finished size in chilled grooves and then straightened on a cold straightening plate and piled on a cooling bed of cast-iron grating. When cool the bars were given a light muriatic acid pickle (1 8/10 per cent solution) to detect the presence or absence of seams. Previous to pickling the ends of all bars had been fractured and showed light longitudinal lamination or separation which was attributed to checking from the sheared end of the billet and was not thought to extend deeply into the bar. After pickling some of the bars showed direct cracks for a distance which then ran off at a tangent and disappeared, but reappeared on a different section of the bar. Some bars

Details of Manufacture of High Speed Steel

MIXTURE

	Weight lbs.
Swedish Melting Bar	10
100 pounds, melted in old pots, without additions, showed: .22 carbon, .06 manganese, .06 silicon, .008 phosphorus, .018 sulphur, .050 vanadium	
Swedish Scrap	5
50 pounds melted in old pots, charcoal and ferromanganese added, showed: 1.08 carbon, .24 manganese, .37 silicon, .010 phosphorus, .020 sulphur, .16 tungsten	
High Speed Steel Scrap	80
100 pounds, melted in old pot, ferromanganese added, showed: .63 carbon, .27 manganese, .35 silicon, .012 phosphorus, .012 sulphur, 14.63 tungsten, 4.00 chromium	
Tungsten Powder: (Metallic-primos)	3¾
98.537 per cent tungsten	
Ferrochrome: (Low carbon-primos)	1¼
45.5 per cent chrome	
Ferro Manganese (2 ozs.)	⅛
Ferro Vanadium (10 ozs.) 42.55 per cent	⅝
Added to the middle six of the eighteen pots, i. e., the seventh to twelfth pots inclusive and consecutively, 20 to 30 minutes before drawing heat	
Brick Dust (Variable with use of pots)	3
Total Charged	103¾

PRACTICE

Packed Cold in No. 60 graphite crucibles.
Melted in 18-pot, natural gas fired furnace.
Total average time of heats 5¼ hours.
Teemed into graphite lined ladle, which had been preheated for an average of 8 hours.
Ladle equipped with graphite nozzle, flow controlled by graphite stopper, at the end of iron goose-neck covered with clay sleeves.
Cast into 6-inch square cast iron molds.
Ingots stripped when set, but while hot.
Ingots charged hot in natural gas fired hammer furnace and cogged to 4-inch square billets.
4-inch square billets inspected and charged into natural gas fired furnace for recogging to 2½-inch quarter octagon billets.
2½-inch quarter-octagon billets inspected and charged into natural gas fired furnace for recogging to billets for finishing mill.
Billets for finishing inspected and sand blasted, re-inspected and charged into natural gas fired billet heating furnace for finishing.
Speed of cogging mill 70 revolutions per minute.
Diameter of collars of rolls 13 inches.
Speed of finishing mill sizes 1-inch and larger, 70 revolutions per minute.
Diameter of collars of rolls 13 inches.
Speed of finishing mill sizes under 1-inch —140 revolutions per minute.
Diameter of collars 10 inches.
Draught in roughing, both mills 1/16-inch, doubled in grooves.
Draught in finishing hand and guide, both mills 1/32-inch, square and oval to round.

ANALYSES

Spoon test from ladle.
Test taken after every second ingot of the four ingots in a cast.
13/16-inch round: spoon, .60 carbon, 17.0 manganese, 0.21 silicon, 15.89 tungsten, 4.45 chromium, .18 vanadium.
1-inch round: spoon, .65 carbon, 11.0 manganese, 0.14 silicon, 15.18 tungsten, 4.34 chromium, .23 vanadium.
1-inch round: bar, .67 carbon.
1-inch round: bar, .68 carbon.

Four tests have the following range of analyses:

	Minimum	Maximum
Carbon	.77	.82
Manganese	.14	.18
Silicon	.16	.30
Phosphorus not over		.014
Sulphur not over		.015
Tungsten	15.22	16.45
Chromium	3.46	4.35
Vanadium	.28	.32

(*Note: When tungsten is low, chromium is high*)

Six tests have the following range of analyses:

	Minimum	Maximum
Carbon	.57	.71
Manganese	.11	.17
Silicon	.14	.24
Phosphorus not over		.014
Sulphur not over		.015
Tungsten	15.18	16.10
Chromium	4.07	4.45
Vanadium	.17	.23

Five tests have the following range of analyses:

	Minimum	Maximum
Carbon	.59	.79
Manganese	.09	.18
Silicon	.16	.21
Phosphorus not over		.014
Sulphur not over		.015
Tungsten	16.20	16.41
Chromium	3.22	3.59
Vanadium	.25	.28

One test has the following analysis:

Carbon	.65
Manganese	.13
Silicon	.38
Tungsten	15.28
Chromium	4.41
Vanadium	.23

showed this condition at both ends but were sound at the middle, some were sound at the ends and cracked longitudinally at the middle, and others appeared to be sound from end to end.

On account of the absence of oxidation in the cracks it was thought that the bars had been cooled too rapidly. Therefore provision against cracking in cooling was made by placing natural gas burners under the cooling bed and thereby transforming it to a hot bed, which improved conditions. It was also desirable to make sure of the physical soundness of the billets before finishing; therefore each one was carefully sand blasted on all sides and while on some a few superficial hair lines were found these were ground out and the billets thus rendered perfect.

In continuing with the rolling of billets into the finished bars, the ends of the bars were cropped after cooling and showed sound material. Inspection of the rolled surface of the bars proved unsatisfactory, for critical examination, even with the assistance of a powerful magnifying glass, failed to show defects. However, as an additional precaution bars were charged into pipes with charcoal and coke dust, the ends of the pipes being sealed with loam. These pipes then were placed in a natural gas annealing furnace and brought up gradually for 10 hours to 680 degrees Cent. The heat was held at that level for 11 hours and then raised to 700 degrees Cent. for one hour. The gas was then turned off, the furnace dampered and the pipes allowed to cool in the furnace. On emptying the pipes, the steel was found to be soft and the surface of the bars silvery white, which are indications of perfect annealing.

Checks Still Present

Inspection of the bars annealed in this fashion showed that the irregular separation or laminations previously referred to still was present at the various points in different bars, while in other bars no trace of this difficulty appeared. In bars 13/16-inch and smaller no discoloration of separated points showed, even though annealed, while in bars 1-inch and larger the separation appeared lightly discolored or tinted, sometimes straw colored and sometimes blue. In investigating the trouble further sound portions of bars whose ends or middle showed the defect, were heated in a natural gas fired welding furnace, quenched in cold fish oil and then fractured throughout their length. The fracture showed absolute soundness and the ideal hardened condition.

Lathe and planer tools and flat drills then were forged in an ordinary blacksmith forge from sound portions of the bars, no evidence of cracking or weakness appearing during the operation. These tools were afterward heated in the same forge for hardening and were then quenched in fish oil until nearly cold and cooled in an air blast of normal temperature, ground and put into machines for test. The results were found to be superior to those of high speed steels of other manufacture of this period.

What Is Answer?

In view of the analyses of the ingredients contained in the mixture and all of the other details of manufacture, which are shown in detail in the accompanying table, the question arises: "To what cause or for what reason, basic, chemical or physical, can the separation or lamination described be correctly attributed, every possible care having been exercised and every possible test pursued?"

American Malleable Iron Is Century Old

(*Concluded from Page* 388)

experiments with atmospheric electricity and published a treatise on this subject in 1868.

Boyden produced the first daguerreotype made in this country. He extended important aid to Morse in the invention of the electric telegraph. He contrived a slate with strings across it for guiding his hand so that he might set down the thoughts that occurred to him while in bed. He did a great many other things too numerous to mention. He was accomplished violinist. But, Boyden lacked business ability and in his last years he worked for $1.50 a day to obtain the necessaries of life. His friends started a fund for his relief, but Boyden put a stop to this when he heard about it. Just before his death he remarked that he had enough experiments on hand to last two whole life times. At the time of his death he was experimenting in bronze. Mr. Boyden died at Hilton in 1870 at the age of 74. The citizens of Newark erected a statue of him on the very spot where the cannon had stood when they welcomed him back home in 1850.

The second prominent figure in the long history of the Barlow Foundry, Inc., was John H. Barlow. He was born in Granville, Mass., in 1806 and at the age of 20 went to work for Samuel W. Collins who, in 1826 founded the Collins Co. at Collinville, Mass., which company also is celebrating its centennial anniversary this year. Mr. Barlow first was bookkeeper and then traveled over the country as well as abroad in selling the products of the company. Shortly after the malleable business at Newark had been sold by Mr. Boyden and became known as the Boston Malleable Cast Iron & Steel Co., it had been bought by Daniel Condit and others. John H. Barlow, a brother-in-law of Mr. Condit, joined the latter in the Newark business in 1849. Shortly after Mr. Condit went into the dried fruit business. There followed some changes in partners from time to time, but Mr. Barlow was the chief figure in the business, as well as an outstanding figure in foundry circles at Newark, to the time of his death in 1894.

The third figure in the company's history is Arthur E. Barlow, son of John H. Barlow. The present Barlow started as an employe in his father's foundry in 1887. He first learned the trade of patternmaking and became proficient in this art. Later Mr. Barlow initiated a number of improvements in foundry practice. Through his work, the Barlow Foundry Co. was the first concern to anneal and melt malleable iron with oil as the fuel. Mr. Barlow was a charter member of the Newark Foundrymen's association and always has been one of its most active members. For a number of years he was its president and for a number of years served as its secretary. In this connection he has been a leading spirit in work which is aiding the foundry industry of Newark. His work in the training of apprentices has been particularly effective and he took a leading part in the campaign which led to the adoption of a course in foundry training in one of the Newark public schools.

Originally the plant was located by Seth Boyden at 26 Orange street, Newark. There the business remained in continuous operation until 1914. That year the company moved into a fine new plant in the Waverly section of Newark. Coincident with the removal into the new building, the company abandoned its historic production of malleable castings and since has confined its activities to gray iron castings. In recent years it has extended both its buildings and its facilities, and has made improvements particularly in the use of machine molding methods. A history of the company would not be complete without mentioning the fact that four other foundries were established in the Newark district by men who had received their training at the Barlow plant.

Large Uses of Steel In Small Ways

WROUGHT iron was used almost entirely in the manufacture of rivets until about 1887 but many years of educational work and salesmanship were required before the trade adopted open hearth steel as the basis. At present various rivet makers use in excess of 250,000 tons annually of rods and wire. According to current statistics Cleveland is the center of the rivet market of the world. The product is manufactured from round steel bars and steel rods of the same diameter as the shanks of the rivets to be formed.

The steel is heated uniformly but is not permitted to soak. The rods intended for small size rivets are heated at a much lower temperature than those intended for rivets of large dimension. The steel must be free from scale and defects while complete filling of the forming die is essential to produce perfect heads. When at the proper temperature the stock is passed to the automatic feed of a rivet-making machine. The operator presses a foot lever and the heated rod is admitted through a shear in the face plate block until it strikes a gage stop. A movable die grips the steel, shears off a blank of the required length and carries it into the groove of a stationary die. A heading tool is moved forword by a ram and upsets the end of the blank forming a head of the desired contour and size. The ram with the heading tool then returns to its starting position and the gripping dies retreat. Meanwhile an ejector pin, which is actuated from a cam on the main driving shaft, pushes the completed work onto a chute and into a receiving tray. The foregoing operations then are repeated until the rod is exhausted.

A rivet machine will produce approximately 15,000 pounds of 1-inch rivets in a working day. The output is not so large when the machine is producing smaller sizes. A machine forming ¾-inch rivets will produce approximately 10,000 pounds a day. Each machine requires one or two rivetmakers to attend to the setting up of the dies and to the feeding disks.

Different types of rivet heads manufactured include round, pan, flat and oval countersunk, cone, oval, truss, wagon box, steeple, rose, machine, globe, wheel, button and double radius button heads. The stock for sheet metal work is packed in cardboard boxes 1 pound to the box, unless otherwise specified, the box marked with the brand and the size of the rivets. Large consumers buy their rivets in bulk. Rivets sold to the stores and to implement manufacturers are packed in 5, 10, 15, and 25 pound cartons and 200 pound kegs.

Rivets are used in the fabrication of boilers, structural steel, bridges, buildings, railway car and locomotive construction, tanks, chimneys, pipe, rail connections, sheet metal work, etc. Rivets for cars usually are ⅝-inch dameter. In the underframes of gondolas rivets ¾ to 1-inch diameter largely are used. In the construction of stacks the diameter of rivets driven usually ranges from ⅝ to ¾-inch.

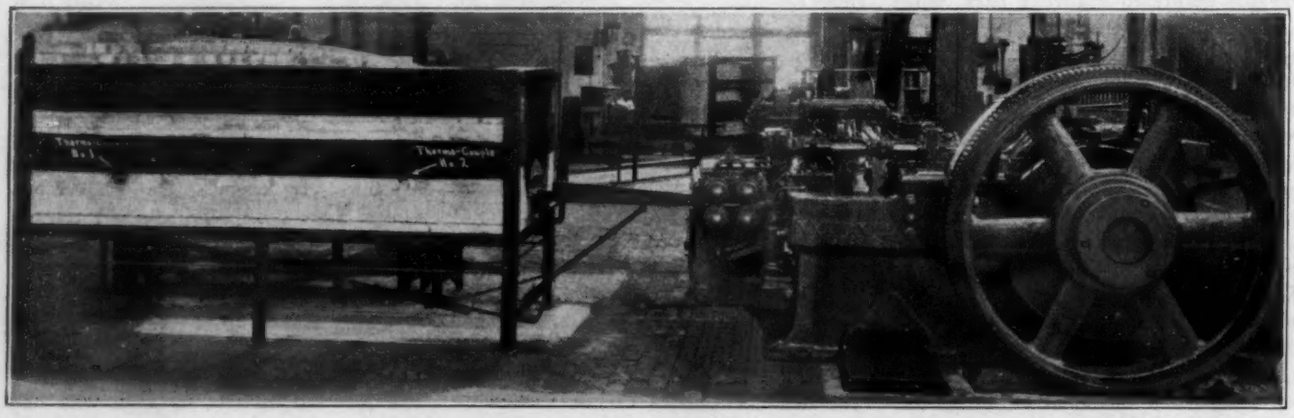
In the use of rivets in the field and in the various fabricating shops a scrap loss of about 15 per cent occurs. This scrappage is due largely to abuse in heating, oxidation, burning and heating the stock too low or too high which produces loose rivets when driven.

Rivets

THIS is the fifty-seventh of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the great American tonnage.

The first article on "corsets" appeared Nov. 22, 1923. Other articles appearing fortnightly since are:

Pins	*Razor Blades*
Cotton Ties	*Pens*
Toys	*Steel Wool*
Spinning Rings	*License Plates*
Card Clothing	*Hypodermic Needles*
Tie Plate	*Shoe Steel*
Tacks	*Crushed Steel*
Knives and Forks	*Skates*
Surgical Instruments	*Needles*
Fence Posts	*Phonograph Needles*
Eyeglass Cases	*Golf Clubs*
Fishing Tackle	*Mechanical Pencils*
Dental Drills	*Burial Caskets*
Pocket Knives	*Telephones*
Rat Guards	*Radio Towers*
Snap Fasteners	*Brushes*
Paper Clips	*Electric Bells*
Steel Vests	*Bookbinder Wire*
Electrical Conduit	*Sucker Rods*
Radiator Furniture	*Watch Hands*
Notebooks	*Steel Furniture*
Metal Beds	*Highway Markers*
Bolts and Nuts	*Camp Cots*
Metal Lath	*Flexible Shaft*
Tin Cans	*Wood Pipe*
Umbrellas	*Buttons*
Steel Barrels	*Sheet Metal Screws*
Washers	



RIVETMAKING INSTALLATION. THE RODS ARE HEATED IN THE FURNACE AT THE LEFT AND THEN PASS INTO THE RIVET FORMING MACHIN E AT THE RIGHT

Editorials

Where Fashion Pays Dividends

FREIGHT cars, common steel, certain forms of equipment and other outstanding outlets for steel lack what might be termed individuality in selling appeal. But the automobile industry, in which steelmakers have an important and a growing stake, presents an entirely different picture. Here all the selling variables have full play. Fashion more than strict utility influences sales. Color, size, comfort, finish, smartness have clinched more contracts than the percentage of chrome in gears or the number of cross-members in frames.

The tradition of continuity helps to sell steel but rarely automobiles. Two cars now passing from the scene have names that go back more than 30 years in automobile making; the most marked success of the past two years is a car built on the ruins of two decided failures.

The IRON TRADE REVIEW'S fifth analysis of steel consumption shows that in 1925 the automobile industry accounted for 14.58 per cent of the country's production of steel. It was close on the heels of the building industry and had narrowed the gap separating it from the railroads. Many a steel dividend check and pay envelope has hinged upon some caprice of automobile fashion. From the elegance of the automobile salon to the heat of the doubling mill is not so far after all.

Competition Is Facing New Mergers

KEEN competition as a dominant factor at present in industrial life is promoting further consolidation of corporate organizations. Despite large quantity production in 1925, profits were small relatively. Many organizations were able to show only meager surplus over operating expenses at the year end. Should the present year develop a reduction in the volume of business, this condition of minimum profits will mean real difficulties for many manufacturers and distributors.

The stage seems to be set for another period of mergers. In fact, many negotiations of different sorts now are coming to the front. Organization of larger and stronger industrial combinations in European manufacturing countries are causing American leaders to view with increasing uneasiness not only their export but also their domestic markets. Iron and steel imports in 1925 were the third largest on record, foreign steel penetrating even to the Middle West.

The attitude of the public and the administration toward business combinations as demonstrated by the reception of recent proposals for further consolidation of railroads, is favorable at present. This is expected to prove a stimulus to the better solidification of various enterprises, a trend that promises to leave its impress deeply upon the producing and marketing condition of American industry.

Seamless Tube Industry Expands

THAT manufacturers of large mill pipe are facing a transitional period seems to be indicated by a number of developments of recent origin. The situation is analogous to the period through which the sheet industry passed a few years ago when the demand for sheets that would withstand forming and at the same time take a coat of enamel satisfactorily, culminated in the construction of many new plants designed for the production of high-grade stock.

Until recently a large portion of drive pipe and casing tonnage shipped into the oil and gas fields in this country was of lapweld quality. However, in recent years the use of large seamless tubing for this purpose has been growing and independent companies especially have been casting about for special equipment and processes to meet this modification of demand. Apparently they have been able to do this by adapting foreign patented methods. The recent decision of leading producers to bring the price of seamless tubing more in keeping with that of the lapweld product, is significant of the broadened market.

Certain pipe producers, whose sole output is marketed in butt and lapwelded forms now are showing a disposition to become identified with the seamless industry. Reports of new steel mill construction for 1925 included more seamless tube mills completed, building and authorized than were recorded in any single year since the beginning of the steel industry in this country. One mill was completed in Indiana while two each are under construction in Ohio and Pennsylvania. Moreover, a West Virginia steelmaker has a seamless unit projected for near future construction. Other pipemakers have representatives abroad investigating various types of seamless mills and subsidiary equipment.

The expansion of the tube industry reflects the

satisfactory returns on capital which the pipe mills have been realizing in recent years. These stand out by contrast with those which have been netted in the production of certain other rolled forms where competition has been much more severe. When the scheduling of these new mills becomes a fact the seamless product will enter the tonnage group, no longer to be classified as a specialty. The present expansion programs in pipe manufacture exemplify the alertness today of steelmaking executives to keep abreast of important market and engineering developments.

Congress Dodges Coal Issue

RESOLUTIONS intended to convey to the President that the sense of the senate is to have the chief executive call together both sides in the present coal controversy and effect a settlement of the strike have met with no success in the upper chamber. The measures proposed simply were a means of "passing the buck" to the White House for what congress has failed to do in the last few years to deal with tieups and emergencies in the coal fields.

Since late in 1923, congress has had before it the exhaustive findings of the Hammond coal commission, appointed by President Harding. These findings comprised the most exhaustive analysis of the coal industry and its troubles ever made. They also contained some sound recommendations. Few in congress ever have given any study to this report. The administration is desirous of seeing the Hammond recommendations translated into statute, by which the coal industry would be placed in the spot-light in the future for the guidance of congress and the country. The probabilities are that when cold weather subsides, the coal troubles will grow dim in congressional memory. When an emergency comes again, the same situation likely will present itself—congress with all the material at hand but unready to use the tool provided.

Scrap Sets Its Standard

GRADUAL assumption of the habiliments of regularly organized industry has been in progress in the iron and steel scrap business for more than a decade. Almost the final garment has been tailored and donned.

Starting out as a ragamuffin, living in alleys and byways, known as the "junk business," scrap has grown to the stature of industrial manhood and has assumed its place in the ranks of the dignified callings, measuring its resources by the millions and its working force by the thousands.

The recent formulation of a general standard of specifications for iron and steel scrap has been of great importance and removes many of the abuses that had grown up with the business from its early days. Credit for this accomplishment is due the National Association of Purchasing Agents, which appointed a committee in September, 1923, to undertake the task. Two conferences with the bureau of standards at Washington have accomplished it. One in January, 1925, tentatively adopted a set of specifications for one year and the second last week, made such changes as seemed wise and adopted the resulting schedule to become effective July 1, or sooner as the convenience of buyers and sellers dictates. Previous to this action numerous classifications existed, the most widely observed being that of the Railway Storekeepers association.

Since all factors of the scrap market, producer, dealer, consumer, and the government agency most interested have collaborated in its formulation, and a year of experience has been applied, the present classification has a firm foundation and should meet the general need except as changing conditions necessitate modifications.

What Our Readers Are Thinking

States Case for Natural Gas

To the Editor:

An article entitled "Producer Gas Used in Tin House," page 1535 of IRON TRADE REVIEW, Dec. 17, 1925, contains a statement that "the supply of natural gas for industrial uses was ample 15 to 20 years ago but within recent years under a program of conservation and higher costs industrial consumers have been compelled to use a substitute."

The impression may be gained from this article that tin plate manufacturers and other industrials in the Pittsburgh district can no longer obtain natural gas for their heating operations or that natural gas is too costly for them to use. Neither is correct.

Some years ago, particularly during the winter of 1917-18, industrial users of natural gas were "cramped" when the demands for gas for househeating exceeded the supply. This, of course, was an inconvenience to the industrial user. Auxiliary fuels were provided in some cases and in other cases substitute fuel system were installed. The impression prevalent at that time, and rightly so, was that natural gas service was undependable during extremely cold weather.

Since then, however, natural gas rates have been adjusted and peak winter demands have thereby been reduced to the extent that service to all classes of gas users has been better during the past three or four years than ever before.

E. J. STEPHANY,
Superintendent of sales department.
Equitable Gas Co.
Pittsburgh, Jan. 28, 1926.

The Reader's Page

Vol. LXXVIII, No. 6 IRON TRADE REVIEW Feb. 11, 1926

Year Marks Centenary of Many Great Inventions

Malleable Iron 100 Years Ago. Page 387.

CELEBRATION last year of the one hundredth anniversary of the invention of the steam locomotive, and this year, the fiftieth anniversary of the telephone are only two of the events of special interest at this time in the chronological order of human affairs. It was 100 years ago that Seth Boyden discovered a method for making malleable iron—an important step in the development of the American casting industry—and coincident with this, the foundry in Newark, N. J., that developed and used the method soon after its discovery, has been in continuous existence. Boyden is one of the most picturesque figures in the story of American inventive genius, and the Barlow Foundry, Inc., the enterprise just referred to, is typical of the rugged qualities exhibited by many of the pioneers in iron and steel manufacture. Read the article, page 387.

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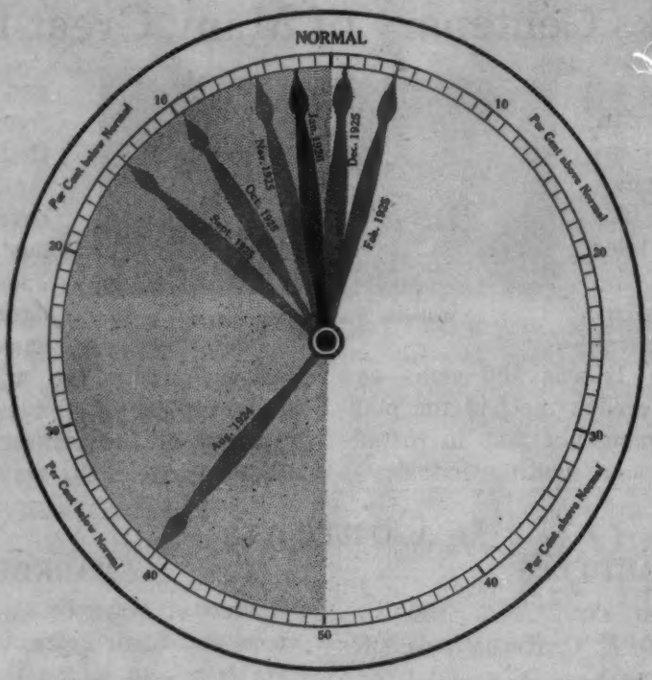
The Business Trend

Blast Furnace

The Dial represents the Blast Furnace Index of Business which is based upon a 40-year record of furnace activity. It is a barometer of general trade.



Business Dial

When 60 per cent of all the country's furnaces are in blast business conditions are normal. The Index is now lower than the normal point on the dial.

Blast Furnace Activities Decline

By JOHN W. HILL, Financial Editor

HAVING crossed over the normal point in December, the Blast Furnace Business Dial fell back again in January. At the close of the month 224 blast furnaces were in operation. This was a loss of 10 during the month. It represented 58.2 per cent of the total number of furnaces in the country of 385.

AT the end of December 234 furnaces were in blast. The thoertical normal is 60 per cent. Therefore the Blast Furnace Dial at the close of the month stood a little more than 2 per cent below the normal point. This recession reflects two things, the slight seasonal lull in the iron and steel trade and the soaring advance of coke prices.

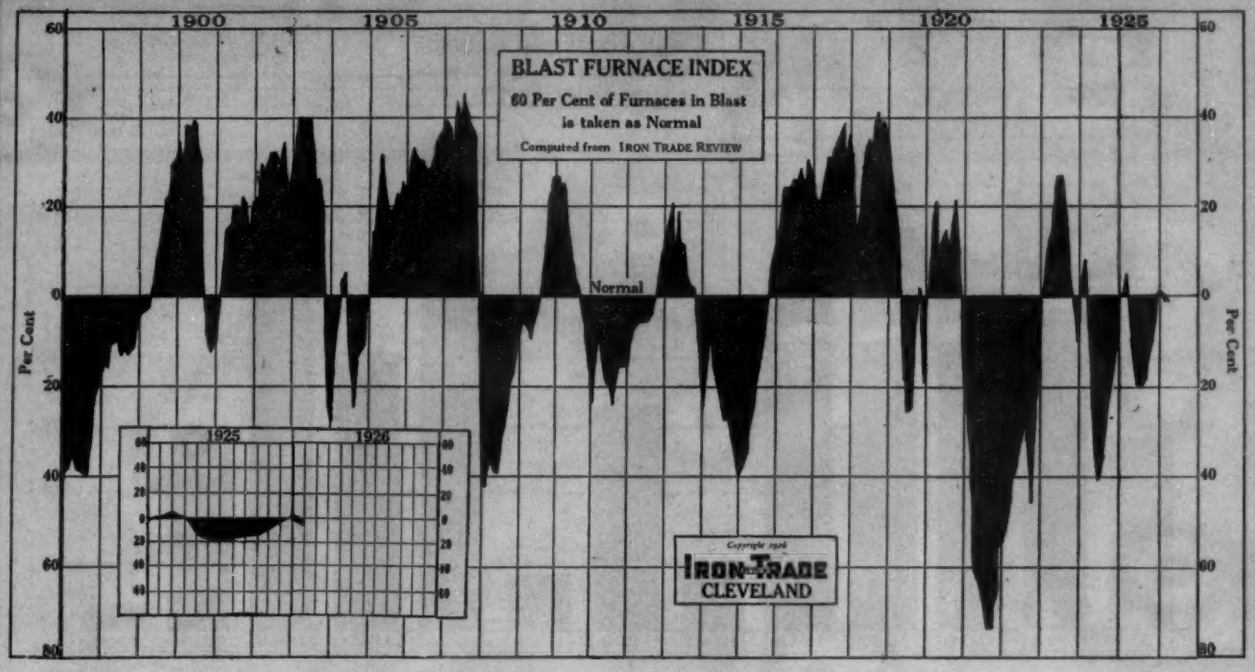
WITH the protraction of the anthracite coal strike, furnace coke has come into extraordinary demand. One year ago coke was selling at $3.65 a ton and now it is quoted at more than $11 a ton, an increase of over 200 per cent. Meanwhile pig iron prices actually are about $2 a ton lower than they were one year ago.

CONFRONTED with this artificial inflation of costs, together with a decline of selling prices, some pig iron makers have found it more profitable to suspend operations. Consequently the Blast Furnace Index of activity has declined. As an indicator for general business this does not signify a turndown, because of the coke factor.

LATE January and early February have been chracterized by distinct price resistance for iron and steel and some slackening of activities. This is not an unusual development for this time of the year. Last year at this season the market was passing through a similar period of doubt and uncertainty.

IN FACT, 1925, although a period of gigantic industrial records, was marked throughout by servatism and sobriety in trade. Nothing has happened since the beginning of the new year to reverse the prevailing opinion that the first few months, at least will be active and prosperous. The present cautious trend allay fears that inflation of prices or of output is a danger.

The Business Trend

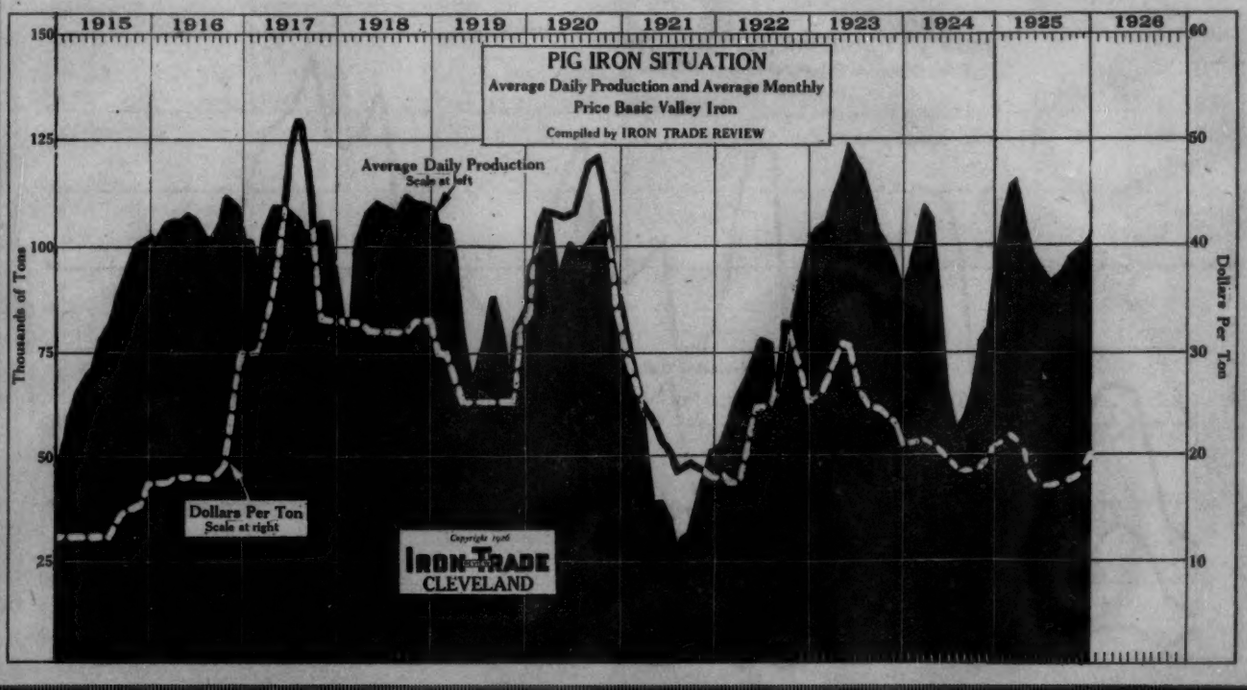


Blast Furnace Index

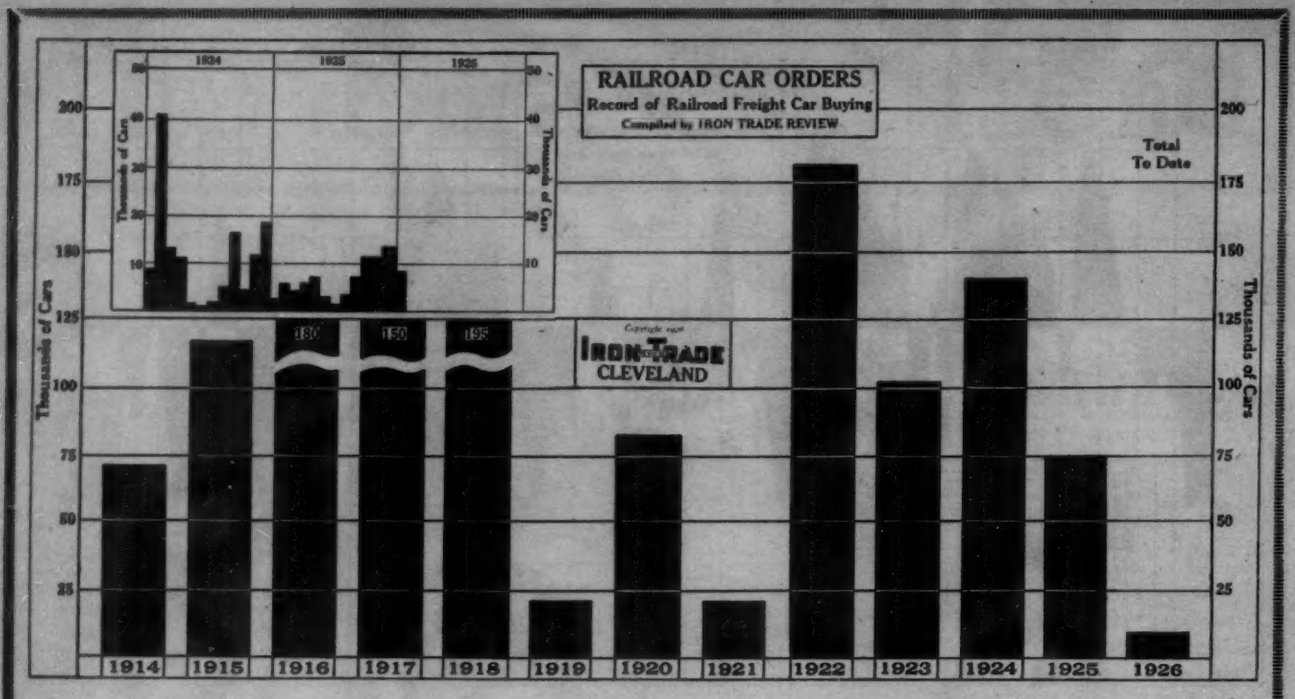
THE number of blast furnaces in operation at the close of December was 224. This was a loss of 10 from preceding month, the decline being due largely to the extreme rise of coke prices. The total number of furnaces in the country is 385, and at the end of January 58.2 per cent of these were active. This compares with 60.7 per cent in blast one month before and with 61 per cent one year ago. The theoretical normal is 60 per cent.

Pig Iron Situation

THE daily average output of pig iron in January was 107,183 tons. This was an increase of 2.2 per cent over the daily rate for December. It was the second highest rate of output for any January with the single exception of January 1925 when the rate reached 108,781 tons daily. The output at the beginning of February was smaller than one month before, because during the month 10 furnaces suspended operations. Basic valley pig iron prices have held firm.



The Business Trend

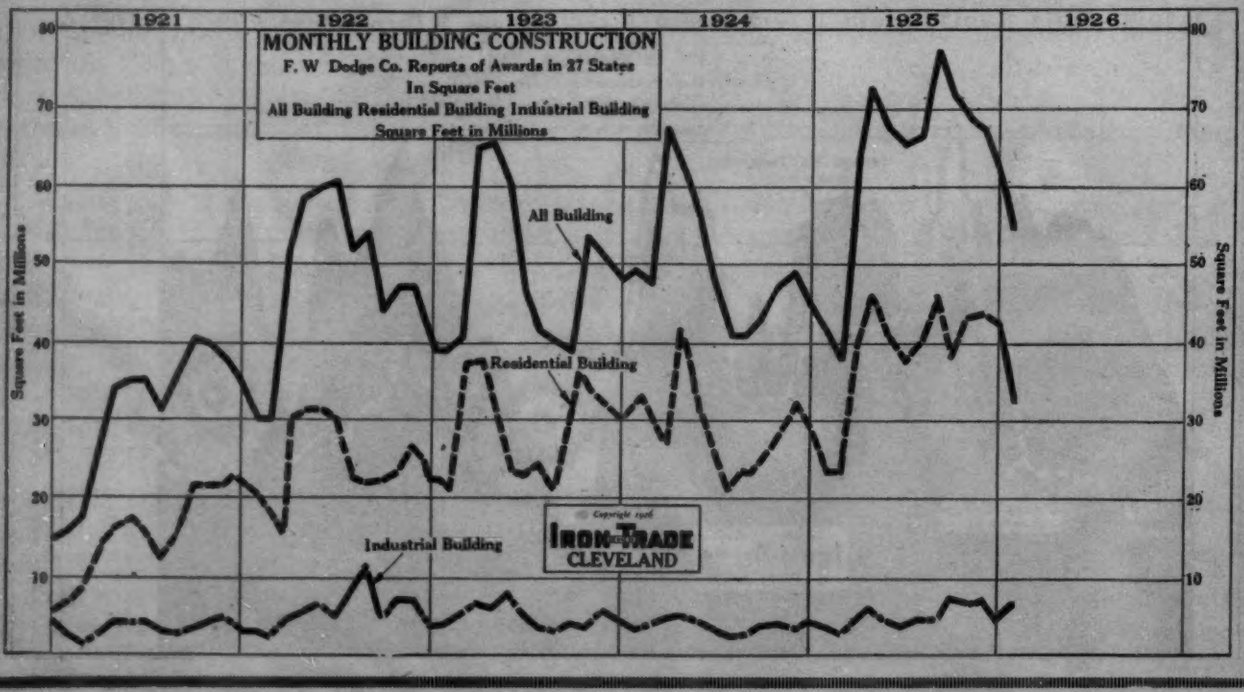


Car Awards

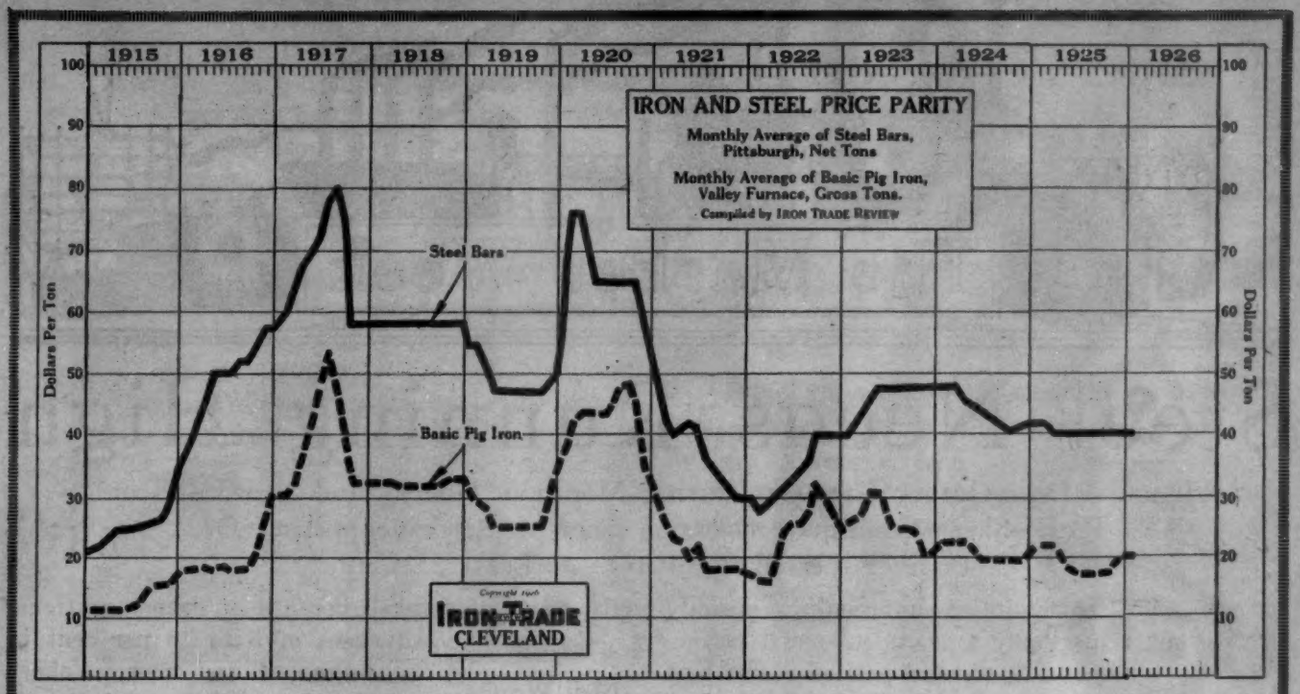
RAILROADS are moving slowly in the matter of placing orders for new equipment. In January awards for freight cars amounted to 8830. This compared with 16, 885 in December. It showed a strong healthy gain over the total of 1695 in January 1925. Awards amounted to 8150 in January 1924 and to 15,000 in January 1923. Because of the fact that there are more than 260,000 idle cars railroads are under no pressure to rush into the market for equipment. Therefore they are taking their time.

Building Construction

JANUARY brought no evidence of any slackening in building construction. The grand total of contract awards in 27 northerstern states reported by F. W. Dodge corp. was 54,583,200 square feet. This disclosed a seasonal decline from December, but it was an increase of 29 per cent over January 1925. Residential building declined from the December total but gained 47 per cent over one year ago. Industrial building was 33 per cent greater than in December and 59 per cent greater than one year ago.



The Business Trend

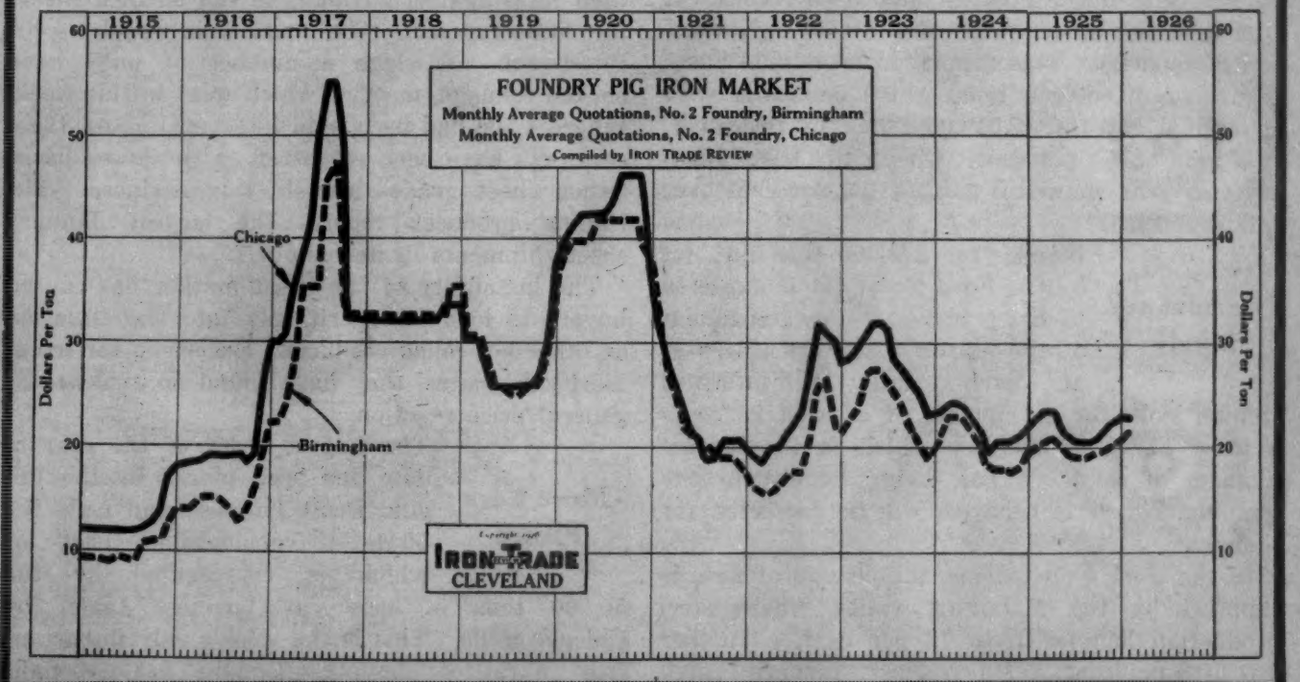

IRON AND STEEL PRICE PARITY
Monthly Average of Steel Bars, Pittsburgh, Net Tons
Monthly Average of Basic Pig Iron, Valley Furnace, Gross Tons.
Compiled by IRON TRADE REVIEW
Steel Bars
Basic Pig Iron
Dollars Per Ton
1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926
IRON TRADE CLEVELAND

Steel Price Parity

ALTHOUGH some steel products have shown a sluggish price tendency in recent weeks, steel bars have held firm. Basic valley pig iron also has held its own, averaging $20 a ton in January compared with a low point of $18 a ton last summer. Steel bars at $40 a ton have not varied since February 1925. The spread between bars and pig iron was $20.20 one year ago, $22 last summer and $20 now. The present lull in the steel market is regarded as seasonal, although rapid price advances are unlikely.

Foundry Pig Iron

THE low point for No. 2 foundry pig iron Chicago in 1925 was reached in June with an average for the month of $20.25 a ton. From that point it rose to $23 where it has held for two months. No. 2 Birmingham reached its low point for 1925 in June at $18 a ton. It advanced steadily to $22.75 a ton in January. In the first week of February, however, the quotations receded and southern iron went to $22 a ton. No decline for northern foundry iron has taken place in February.


FOUNDRY PIG IRON MARKET
Monthly Average Quotations, No. 2 Foundry, Birmingham
Monthly Average Quotations, No. 2 Foundry, Chicago
Compiled by IRON TRADE REVIEW
Chicago
Birmingham
Dollars Per Ton
1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926
IRON TRADE CLEVELAND

Steel Needs Running High

January Ingot Output Greatest for that Month in History and Near All-Time Peak—Sheet Conditions Occasion Some Unsettlement—Iron Ore Prices Expected to Advance at Least 25 Cents

HEAVY consumption proceeding steadily but remarkably free of its usual accompaniment of flurry and tension seems best to describe the iron and steel situation. The key continues the rapid dispatch of material from producer to user. The volume of new business is not spectacular, but good and constant. Expressions of disappointment as to the amount now being placed leaves doubt whether many of these expectations were not unwarranted. Compared with one year ago, tonnage is better spread out and the high pressure then that was to fade out sharply by the end of March is absent.

January's high record of steel output seems to register the scope of present demand, especially since there is no evidence of much material going into stock. Ingot production then rose to the highest point for any January in history or within 1.2 per cent of the greatest month on record. It approximated 89 per cent of the country's theoretical capacity. This meant, on an annual basis, a rate of 49,680,000 tons, which compares with an annual rate of 47,550,000 tons in December, or a gain of 4.4 per cent. On a daily basis January this year showed a gain of 2.8 per cent over January, 1925.

Ore Advance Likely

Inquiry for 275,000 tons put out by the Ford Motor Co. is expected to bring about the establishment of the season's lake ore prices at an early date. Well-informed opinion looks for an advance of at least 25 cents a ton. The Ford inquiry which is the largest tonnage of lake ore now being bought in the open market, it is believed, will be competed for sharply.

In the week's operations, the change of note is supplied by the Mahoning valley where steel production has fallen to 73 per cent, a further loss of 8 per cent. More blast furnace capacity has been banked because of coke conditions.

Mill Wages Raised

Advances of 5 to 10 per cent in the wages of day men in sheet and tin plate mills posted Feb. 1 by the American Sheet & Tin Plate Co. interject a new element into the disturbed sheet situation where independent companies have been struggling among themselves with conditions of severe price competition. The advances have been granted, it is believed, to offset the more attractive wages being offered by the building and other trades. A number of the independent companies making tin plate have met the raise. Should the sheet mills generally follow this action, the question of wages for the tonnage men based on current selling prices, promises to be raised.

Automobile builders, it now is clear, have won their fight against advances in full finished sheets for first quarter. The market is openly 4.40c Pittsburgh, at which a number of mills have booked tonnage, most of which went in this week. Where 4.50c had been paid in several cases, these contracts have been rewritten to the lower basis. Other sheet grades are showing easiness. The leading producer reports the largest January sheet shipments in its history.

The instability of the sheet market has caused buyers to look more critically into the situation on other hot-rolled products. Excepting for irregularity in plates, they have found no evidence of general price reaction.

More Cars Placed

The largest order of the year to date has been placed by the Pacific Fruit Express and calls for 5041 a considerable part of which is represented by the 50,000 tons of new car business taken by Chicago mills. This is the week's only important item in railroad buying. Cudahy & Co. bought

500. The Western Maryland has inquired for 1000. The St. Louis-San Francisco placed 950 car repairs and the Southern a large number.

Inquiry for pig iron for second quarter is growing but the market remains sluggish. Easier price conditions at several points.

The coke market continues to produce wide price swings. After having sold at $12.50 the middle of last week, furnace fuel is down 50 cents to $1. Crushed coke sold up to $14.50.

IRON TRADE REVIEW composite of fourteen leading iron and steel products has eased downward again this week to $38.98. A week ago it was $39.00.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 10, 1926	Jan. 1926	Nov. 1925	Feb. 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$22.76	22.76	22.61	24.61
Basic, valley	20.00	20.00	19.85	22.00
Basic eastern del., eastern Pa.	22.50	22.75	22.70	24.25
*No. 2 foundry, del., Pittsburgh	22.26	22.26	22.11	23.76
No. 2 foundry, Chicago	23.00	23.00	22.75	24.00
*Southern, No. 2, Birmingham	22.00	22.75	21.00	20.75
*Southern Ohio, No. 2 Ironton	20.50	21.40	21.00	22.00
**No. 2X, Virginia furnace	23.00	23.50	23.00	24.50
**No. 2X, eastern, del. Phila.	24.01	24.26	24.01	25.26
Malleable, valley	20.50	20.50	20.35	22.00
Malleable, Chicago	23.00	23.00	22.75	24.00
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	21.76	21.76	21.61	23.26
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	10.50	6.90	6.35	3.65
Connellsville, foundry, ovens	7.50	6.40	6.85	4.30
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.50	35.25	39.00
Sheet bars, open-hearth, Pittsburgh	36.00	36.50	35.25	39.00
Billets, open-hearth, Pittsburgh	35.00	35.50	35.00	37.60
Wire rods, Pittsburgh	45.00	45.00	45.50	48.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	2.00	2.15
Steel bars, Chicago	2.10	2.10	2.10	2.20
Steel bars, Philadelphia	2.32	2.32	2.32	2.37
Iron bars, Philadelphia	2.22	2.22	2.22	2.28
Iron bars, Chicago, mill	2.00	2.00	2.00	2.00
Beams, Pittsburgh	1.90	1.90	1.85	2.10
Beams, Philadelphia	2.17	2.17	2.17	2.32
Beams, Chicago	2.10	2.10	2.10	2.30
Tank plates, Pittsburgh	1.85	1.90	1.85	2.10
Tank plates, Philadelphia	2.12	2.12	1.92	2.32
Tank plates, Chicago	2.10	2.10	2.10	2.30
Sheets, black, No. 28, Pittsburgh	3.35	3.35	3.25	3.50
Sheets, blue anl., No. 10, Pittsburgh	2.50	2.50	2.40	2.75
Sheets, galvanized, No. 28, Pittsburgh	4.60	4.60	4.50	4.80
Sheets, black, No. 28, Chicago	3.50	3.50	3.45	3.85
Sheets, blue anl. No. 10, Chicago	2.65	2.65	2.60	2.95
Sheets, galvanized, No. 28, Chicago	4.75	4.75	4.70	5.00
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago	2.70	2.70	2.70	3.05
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	17.50	18.75	19.50	19.00
Heavy melting steel, eastern Pa.	16.25	17.35	17.60	17.85
Heavy melting steel, Chicago	13.75	14.95	16.40	17.55
No. 1 wrought, eastern Pa.	18.00	18.35	18.75	20.50
No. 1 wrought, Chicago	14.25	15.00	17.70	17.75
Rails for rolling, Chicago	16.25	17.55	19.40	19.15

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Feb. 10, 1926)	**$38.98**
Last week (Feb. 3, 1926)	**39.00**
One month ago (January, 1926)	**39.17**
Three months ago (November, 1925)	**38.73**
One year ago (February, 1925)	**41.13**
Ten years ago (February, 1916)	**35.63**
Thirteen years ago (February, 1913)	**28.05**

Late News Flashes

Chicago Maintains Its Rate

Chicago, Feb. 9.—Chicago mills are maintaining an ingot rate of 89 per cent and continue to have 27 out of 35 steel works stacks active. The tendency in ingot operations continues slowly upward.

Billet Classification Committee to Meet

New York, Feb. 9.—The committee appointed by the American Iron and Steel institute recently to classify billets with reference to manufacture and requirements of consumers is expected to meet in New York shortly. Charles O. Hadly, general sales manager of the Alan Wood Iron & Steel Co., Philadelphia, is chairman.

Another Furnace Is Banked

Pittsburgh, Feb. 9.—The Jones & Laughlin Steel Corp. has banked another furnace, without interfering with steel mill operations. Steelmaking operations in this district continue at 90 per cent. Most of the Homestead and Duquesne works of the Carnegie Steel Co. show increased operations. At Homestead, new mill units are in operation under electricity instead of steam. At Farrell, Pa., six open-hearths are down due to to the installation of the waste-heat boilers.

Valley Operations Slightly Lower

Youngstown, O., Feb. 9.—District operations have declined further this week because of a lack of sheet specifications. Steelworks activity stands at 73 per cent of physical capacity compared with 76 per cent a week ago. Sheetmakers have 70 per cent of equipment engaged, a decline of 15 per cent compared with a week ago. Pipe and bar mills are rolling on a 90 per cent basis while tin mills are operating about 95 per cent equipment.

1925 Automotive Shipments Set Record

New York, Feb. 9.—Rail shipments of automobiles and motor products in 1925 exceeded all previous records, it was announced here today. Total automotive freight, including shipments of motor cars and parts, gasoline for automobile use and kindred products totaled 3,040,000 carloads, according to the National Automobile Chamber of Commerce. This compares with 8,866,392 carloads of coal and 2,016,854 carloads of ore.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30 to 41.30
Chicago	35.00
Forging, Pittsburgh	41.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh	36.00
Youngstown	36.00

SLABS

Pittsburgh	35.00
Youngstown	35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅜-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	1.96c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.80c to 1.90c
Philadelphia	2.12c
New York	2.14c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.00c to 2.10c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c
Pittsburgh, forging quality	2.15c
Philadelphia, soft steel	2.32c
New York, soft steel	2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.22c
New York, common iron	2.24c
Chicago, common iron	2.00c

Hoops, Bands Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c to 2.50c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass., Chicago	4.05c to 4.15c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—	
2300 (3½ per cent nickel)	4.60c
3100 (Nickel chromium)	3.60c
6100 (Chrome vanadium)	4.40c
6100 (Chrome vanad. spring)	3.85c
9250 (Silico-mang. spring)	3.25c to 3.40c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill g.t.	36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.25c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28. Pittsburgh, base	3.25c to 3.35c
No. 28. Philadelphia, delivered	3.57c to 3.67c
No. 28. Gary, Indiana Harbor	3.45c
No. 28. Chicago delivered	3.50c

TIN MILL, BLACK

No. 28. Pittsburgh	3.25c to 3.35c
No. 28. Gary base	3.45c

GALVANIZED

No. 28. Pittsburgh, base	4.50c to 4.60c
No. 28. Philadelphia, delivered	4.92c
No. 28. Gary, Indiana Harbor	4.70c
No. 28. Chicago, delivered	4.75c

BLUE ANNEALED

No. 10. Pittsburgh, base	2.45c to 2.50c
No. 10. Philadelphia, delivered	2.82c
No. 10. Gary, Indiana Harbor	2.60c
No. 10. Chicago, delivered	2.65c

AUTOMOBILE SHEETS

No. 22. Pittsburgh, base	4.40c to 4.50c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.85

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$53.20
Six-inch and over, Chicago	49.20
Four-inch, Birmingham	45.00
Six-inch and over, Birmingham	41.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list

Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger 75, 10 and 5 off

Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller 80, 10 and 5 off

Cold finished S. A. E. semifinished ⅝-inch and larger 75, 10, 10 and 5 off

Cold finished S. A. E. semifinished 9/16-inch and smaller 80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅝ x 6-inch, smaller and shorter)

Rolled thread	60, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅝ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

Stove bolts, 80, 10 and 5 off plus 2½ off in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-inch and smaller Pittsburgh; Cleveland	70 and 10 off
**Rivets, 7/16 inch and smaller Chicago	70 and 10 to 70 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts. dist	6.25 off
Lock Washers, f.o.b. factory	85 off

Pig Iron

Sales Slightly Larger, and Shipments High —More First Quarter Iron Needed—Prices in Some Districts Easier

MORE interest in pig iron for the second quarter is noted in most districts, but within a month and a half of that period there are no visible signs of a buying movement at an early date. Some melters are near the end of their purchases for the first quarter, and hand-to-mouth buying again is in evidence. While the valley district represents a temporary "dead spot" in the market, shipments from the furnaces continue at a high rate, certain melters having called for shipments not due them until the second quarter. Furnace interests represented at Cleveland have sold about 17,000 tons during the past week. Resale iron depressed prices in southern Ohio. Lake furnace prices have eased to $22.50, base, and quotations of $22.50, Chicago.

PITTSBURGH, Feb. 9.—The pig iron market is duller than at any time in several months. The only ray of light is the continued high specifying rate against contracts. Customers are taking all the iron due, some ahead of time, particularly so the group which late last year contracted for the first half of this year. A few are taking out second quarter tonnage, and if the consumption rate is maintained they will have to purchase additional second quarter iron. Inquiries for basic are entirely lacking. Bessemer sales are confined to two or three carloads weekly at $21. One or two malleable sales, involving 100 to 200 tons at $20.50 valley, are noted. Foundry iron inquiries and sales are confined to filling-in tonnages at $20.50, valley, base. This character of buying likewise is true of low phosphorus iron and other special irons.

Boston, Feb. 9.—New England foundries show more interest in second quarter tonnage. Sales of the past week at Boston showed a moderate increase. A Massachusetts consumer bought 450 tons of No. 2X iron (2.25 to 2.75 silicon) from a Buffalo producer at $21.50, furnace. or $26.41 delivered. Several other 200 and 300-ton lots were closed at about the same delivered price. Continental iron has sold at $21.50, on cars, Boston. Stoveworks and textile machine foundries are more active.

Philadelphia, Feb. 9.—Pig iron demand is quiet, and the market is untested. Eastern Pennsylvania foundry iron is $22.50 to $23, base, furnace, but these prices have been shaded recently on some large tonnages. The market for basic iron is featureless. Sales of low phosphorus iron aggregate around 1000 tons, at unchanged prices. Spot foreign iron now is $20.50, duty paid, and higher. For second quarter quotations are $21, base, duty paid. Consumers generally are not interested in the second quarter. The Pulaski furnace, Pulaski, Va., was lighted last Thursday.

Buffalo, Feb. 9.—New inquiry for pig iron aggregates 2500 to 3000 tons, including one lot of 750 tons of foundry. Forward buying has dropped to a low point and large consumers show little interest in the market. Prices range upward from $21, base, for low silicon foundry and malleable, to $22, asked by some merchants. On second quarter business all makers quote $21. Sixteen of 21 furnaces in this district are in blast.

Cleveland, Feb. 9.—Demand for pig iron continues of moderate proportions, sales in widely distributed districts served by furnace companies with headquarters here amounting to about 17,000 tons in the week. Cleveland melters have not appeared in the market for several weeks, but there is a fair degree of activity in Michigan and Indiana territory. Eight-five per cent of one company's sales, totaling 12,000 tons, were for delivery in the second quarter; these including two lots of 2000 tons each and several 1000-ton orders. There still is some hand-to-month buying for first quarter. Lake furnace quotations on recent inquiries from central and southern Ohio points have been as much as $1 over the prices named by the makers in those districts, the northern furnaces being unable to compete at present levels, notwithstanding recent freight adjustments. The market is slightly easier west of Cleveland, as buyers have been able to place second quarter orders at $22.50, lake furnace, although $23 still is obtained. Chicago furnaces are quoting $22.50 on inquiries in the competitive districts. The Cleveland market is untested, furnaces quoting nominally $22, furnace, for local delivery. Some sales have been made recently for outside delivery at $21, furnace. Recent sales are noted at $20.50, base, valley, for first and second quarter. Inquiry is of a rather listless character; in all about 4000 tons pending before furnaces represented here.

Cincinnati, Feb. 9.—Offerings of resale northern foundry iron under $21, Ironton, by two selling agencies here are are being absorbed as quickly as expected. The agents offering the iron purchased a total of approximately 10,000 tons from a southern Ohio producer some time ago, and paid slightly more than $21 furnace. The $20.50 quotation has not disturbed the producers who are adhering to $21 and are booking business at that price. The outstanding sale of the week was that of 1175 tons of northern iron and 150 tons of bessemer by the Worthington Pump & Machinery Corp. for Elmwood, O. The Seybold Machine Co., Dayton, O., is reported to have bought 800 tons of northern and 200 tons of southern, while the Packard Motor Co., Detroit, closed for 200 tons of 6 to 7 per cent silvery. Re-

(*Concluded on Page* 422)

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$21.00
Bessemer, Pittsburgh	22.76
Basic, valley	20.00
Basic, Pittsburgh	21.76
Basic, Buffalo	20.00 to 20.50
Basic, del., eastern Pa.	22.50 to 23.00
Malleable, valley	20.50
Malleable, Pittsburgh	22.26
Malleable, del., Cleveland	22.26 to 22.50
Malleable, Chicago	23.00
Malleable, Buffalo	21.00 to 22.00
Malleable, del., eastern Pa.	24.00 to 24.75
No. IX, eastern del., Phila.	23.50 to 24.76
No. IX, Buffalo	22.50 to 23.50
No. 1 foundry, Chicago	23.50
No. 2 foundry, valley	20.50
No. 2 foundry, Pittsburgh	22.26
No. 2 foundry, Buffalo	21.00 to 22.00
No. 2 foundry, Chicago	23.00
No. 2 foundry, Granite City	23.50 to 24.00
No. 2 foundry, Ironton fur.	20.50 to 21.00
No. 2 foundry, del., Cleveland	22.26 to 22.50
No. 2 foundry, del., Phila.	23.39 to 23.76
No. 2 foundry, N. J., tidewater	23.39 to 24.76
No. 2X, eastern del., Phila.	23.89 to 24.26
No. 2X, east, N. J., tidewater	23.89 to 25.26
No. 2X, eastern del., Boston	26.15 to 27.15
No. 2X, foundry, Buffalo furnace	21.50 to 22.50
No. 2X, Buffalo, del., Boston	26.41 to 27.41
Continental foundry f.ob. Boston	21.50 to 22.50
India, 2.25 to 2.75 silicon, delivered cars, Boston	22.50 to 23.00
No. 2 Alabama, Birmingham	22.00 to 23.00
No. 2 Alabama, Cincinnati	26.69
No. 2 Tenn., Birmingham	22.00
No. 2 Tenn., Cincinnati	25.69
No. 2 southern, Philadelphia	27.01 to 28.01
No. 2 southern, Chicago	27.01 to 28.01
No. 2 southern, Chicago (barge and rail)	25.18
No. 2 southern, Boston (rail and water)	27.91 to 28.91
No. 2 southern, Cleveland	27.01 to 28.01
No. 2 southern, St. Louis	25.42 to 26.42
No. 2X, Virginia, furnace	23.00 to 23.25
No. 2X, Virginia, Phila.	28.17 to 28.42
No. 2X, Virginia, Jersey City	28.54 to 28.79
No. 2X, Virginia, Boston	28.92 to 29.17
Gray forge, eastern Pa.	22.50 to 23.00
Gray forge, val. del. Pitts.	21.76
Low phos., standard, valley	28.00 to 28.50
Low phos., standard, Phila.	24.76 to 27.79
Low phos., Lebanon, furnace	24.00 to 25.00
*Low phos., English	24.26 to 24.76
Charcoal, Birmingham	31.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $26.50; 6 per cent $27.50; 7 per cent $28.50; 8 per cent $29.50; 9 per cent $31.00; 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39; and 14 per cent $41.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $35.00; 11 per cent $37.00; 12 per cent $39.00; 13 per cent $41.00; 14 per cent $43.00; 15 per cent $45.00; 16 per cent $48.00; 17 per cent $50.50.

*Duty paid, delivered Philadelphia consumers.

Coke

Connellsville Furnace Fuel Drops $1 to $11.50—By-Product Prices Remain Steady

CONNELLSVILLE coke prices continue to exhibit an erratic tendency, within a high range. From $12.50, ovens, a week ago, quotations have drifted down to $11.50, for standard furnace fuel. Car congestion in the East has been largely overcome, although some coke shipped Jan. 10 is just now reaching Perth Amboy, N. J. Eastern buyers are more cautious.

Pittsburgh, Feb. 9.—Beehive coke still is subject to overnight changes. The last 12 hours have brought reductions of 50 cents to $1. In the middle of last week standard furnace coke was selling at $12.50, yesterday at $12. Today's quotations are no higher than $11.50. Some makers are selling at $11. Crushed coke was $14.50 last week; $14 yesterday, and today is bringing $13.50. Yard crushed, recently bringing $13 to $13.50 now is $1 lower. Producers are sensing an increasingly cautious attitude on the part of the eastern trade that has supported high figures to date. This is only natural because of delayed deliveries due to car congestion. Some coke ordered on Jan. 10 is just reaching Perth Amboy piers. The situation now is slightly better. The foundry coke range still is wide, some makers getting $13 and $13.50 others protecting their trade at $7.50. Shipments are made against contracts of $5 and up.

Production of coke in the Connellsville region for the week ended Jan. 30 was 232,880 tons, compared with 234,870 tons the preceding week, according to the *Connellsville Courier*.

Boston, Feb. 9.—Spot beehive coke has sold in increased volume in New England during the week. Prices range from $14 to $16 delivered. Transportation difficulties due to a recent storm have augmented an already active demand for by-product foundry fuel. The price under contract for this fuel remains unchanged at $13, delivered.

Cincinnati, Feb. 9.—Spot Wise county foundry and furnace coke was sold here the past week at $7 to $8, ovens. A leading seller has booked 125,000 tons of coke for heating purposes since Feb. 1. A slight car shortage in the Wise county and New River districts is interfering with shipments. With foundries resuming operations on a broader scale, demand is increasing in volume.

St. Louis, Feb. 9.—Demand for coke exceeds output, and sellers are being urged to make deliveries. The gradually increasing melt at foundries is reflected in a strange demand from that source. Sellers report heavy specifications on contracts, particularly from the North and West. Prices are steady, except where premiums are being paid for immediate shipment.

Birmingham, Ala., Feb. 8.—Coke production and delivery are steady. Quotations on the foundry grade are firm around $6, with a little being sold at $6.50. Plans are being formulated for a substantial increase of coke production.

Coke Prices

	Beehive, Ovens Prices per net ton	
Connellsville furnace	$11.00 to	11.50
Connellsville, foundry	7.50 to	13.50
New River foundry	7.00 to	8.00
New River furnace		6.00
Wise county furnace	5.50 to	6.00
Wise county foundry	6.50 to	7.00
Alabama foundry	5.75 to	6.00
Alabama furnace		5.50
By-Product		
Foundry, Newark, N. J.; del.	$11.01 to	11.52
Foundry, Chicago, ovens		10.50
Foundry, New England, del.		13.00
Foundry, St. Louis		10.00
Foundry, Granite City, Ill.		10.00
Foundry, Birmingham	5.75 to	6.00
Foundry, Indianapolis, del.		11.25

Ferroalloys

Spot Spiegel Is Active—Heavy Tonnages of Ferro Under Contract

New York, Feb. 9.—Spot buying of spiegeleisen in carloads up to 100-ton lots is active at $34, furnace for 20 per cent and $33 for 16 to 19 per cent. Consumers are taking heavy deliveries on contracts. Continued absence of important ferromanganese business reflects the extent to which business was placed quietly under contract last fall. The largest recent purchase involves 300 tons. The Bethlehem Steel Co. evidently has the largest order book in hand, having some contracts covering the full 1926 requirements. The current price is firm at $115, duty paid tidewater.

Special ferroalloys are firm but prices are unchanged. Shipments are going mostly on contracts. In some alloys where users are not so well covered with contracts, as for instance ferrovanadium, sales are active. Ores are unchanged except tungsten, but ferrotungsten is steady. Wolframite, tungsten ore, is about $12.20 a short ton unit and up for futures, and $12.25 to $12.50 for spot. These prices are slightly easy.

Pittsburgh, Feb. 9.—Shipments of ferromanganese and ferrosilicon are active due to comparatively high rates of consumption with accompanying active specifications. New business largely is lacking. Except for small concessions available in one or two directions on imported material, the market on ferromanganese remains firm at $115, seaboard base, on the part of domestic manufacturers and this figure likewise is named by the important sellers of English material. Spiegeleisen producers are well obligated, particularly on 19 to 21 per cent, so that but little additional tonnage is available for first half. The price is firm at $34. Some 16 to 19 per cent spiegeleisen is available and one or two transactions lately have been noted, one for a small lot for prompt shipment, another for future shipment involving about 250 tons. The quoted market price is $33.

Chicago, Feb. 9.—Silvery iron has been more active recently and 300 tons has been placed in two lots. The Jackson county schedule is being maintained. Neither ferromanganese nor spiegeleisen is active but the market is unchanged at $115, seaboard, for ferromanganese and $34, domestic furnace, for spiegeleisen.

Will Build By-Product Plant at Clairton

Pittsburgh, Feb. 9.—Coincident with the official announcement of the Carnegie Steel Co.'s intent of spending approximately $4,000,000 for the construction of 300 additional coke ovens at Clairton, comes word that an eastern concern, the American Oil Co. subsidiary of the Pan-American Petroleum Eastern which in turn is controlled by the Standard Oil Co. of Indiana, is planning construction of a plant near Elizabeth, in the vicinity of Clairton, to handle much of the output of the Clairton works in the manufacture of gasoline, oils, etc., and will erect a plant estimated to cost eventually several hundred thousand dollars. Work on both projects is expected to start in the spring. The Carnegie company also is said to be planning construction of a large warehouse in Texas for distribution purposes and storage for river transported products from this district.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	34.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, per pound contained	1.14 to 1.16
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	122.50

†Duty paid

Plates

Demand Shows Some Improvement—Sharp Competition in East—Place Large Car Orders

PLATE business in the aggregate has shown some improvement during the past week. Car awards at Chicago give the leading interest 50,000 tons of steel, mainly plates. Barges placed at Pittsburgh account for 3500 tons; bids will be taken soon on 30 barges and three towboats for the upper Mississippi river, requiring 10,000 tons. Eastern mills report improvement.

PLATE PRICES, PAGE 410

Pittsburgh, Feb. 9. — Additional barge awards have been made affording more business for plate mills. The American Bridge Co. and the Jones & Laughlin Steel Corp. shared in about 3500 tons of this business this week. Some time prior to April 1, bids will be asked by the Upper Mississippi Barge Line Co., Minneapolis, on 30 barges and three towboats. Considerable car plate business is being placed each week. Competition particularly on the part of eastern makers, is keener than usual, since they enter territories on a 15½c freight rate or more from Pittsburgh and quote 1.80c and 1.85c, Pittsburgh base. The minimum offered here is 1.90c.

Boston, Feb. 9.—Some recent price cutting in plates in New England has failed to develop orders, and most producers have returned to 1.80c, Pittsburgh. Eastern mills maintain production at the January rate. A car manufacturer is inquiring for 200 tons.

Philadelphia, Feb. 9.—Plate demand, which for a time, did not replace shipments, now is improved. The market is firm at 1.80c, Pittsburgh. The New Haven railroad is inquiring for two car floats each involving 1000 tons of steel, mainly plates.

Chicago, Feb. 9.—Fairly prompt delivery can be made by local plate mills on sheared plates but on universal mill plates three to four months is the best delivery promised. The leading maker will receive approximately 50,000 tons of heavy steel, chiefly plates, from cars placed last week. Platemakers have protection out on approximately 3000 tons of oil tankage. Tank makers in this district have light order books. Eastern competition is said not to have broken down the level of 2.10c, Chicago, in Chicago territory proper. Some plates of a special size and taking an extra for quality have been going into Milwaukee territory.

Cleveland, Feb. 9.—Plate conditions are somewhat erratic, incoming tonnage being liberal one day and light the next. The average amount is somewhat disappointing. Additional refinery still business of miscellaneous character placed calls for 600 to 800 tons. A lot of 500 tons or so for stills for the Texas Co. remains unplaced. Plates openly are quoted at 1.85c with occasional small lots commanding 1.90c, Pittsburgh. When the business is especially desirable, 1.80c is developed.

CONTRACTS PLACED

975 tons, six barges for the Rogers Sand Co., Pittsburgh, to the Jones & Laughlin Steel Corp.
975 tons, six barges for the Rogers Sand Co., Pittsburgh, to the American Bridge Co.
1800 tons, six barges 225 x 36 x 8 feet for the Barrett Line, Cincinnati, to the American Bridge Co.
600 to 800 tons, miscellaneous oil refinery stills, to the Henry Vogt Machine Co.
350 tons, stacks, Brooklyn Edison Co., Brooklyn, N. Y., to Riter-Conley Co.

CONTRACTS PENDING

10,000 tons, estimated, 30 barges and 3 towboats for the Upper Mississippi Barge Line, Minneapolis; bids to be asked before April 1.
300 tons, plates for tanks, at the naval air station at Pensacola, Fla.; pending.
2000 tons, two car floats of 1000 tons each for New Haven railroad; pending.

Elect Kirk-Latty Head

Cleveland, Feb. 9.—F. H. McIsaac was elected president of the Kirk-Latty Mfg. Co., manufacturer of bolts, nuts and rivets, effective Feb. 8. He succeeds the late Samuel D. Latty, president and founder, whose death was announced in the Feb. 4 issue of IRON TRADE REVIEW. Mr. McIsaac now is president, treasurer and general manager of the Kirk-Latty company. He started with Mr. Latty in 1899 as office boy, holding positions of clerk, scale boy, bookkeeper, cashier and since 1912 has been treasurer.

Semifinished

Low-Price Contracts Fail of Renewal, Market Firm—New Demand in Open Market

RECENT heavy bookings of sheet bars, billets and slabs are making for a quiet market, and mills with good specifications and heavy shipments are firm on prices. Some users who have just completed $33 and $34 contracts have been unsuccessful in renewing them at these figures; standard billets and slabs being $35, and sheet bars $36.

SEMIFINISHED STEEL PRICES, PAGE 410

Youngstown, O., Feb. 9.—Conditions in the semifinished market are unchanged. Mills at present have no tonnages to offer in the open market. Consumers of sheet bars are well covered and little interest is noted in the market. The volume of specified tonnage declined this week. Sheet bars and small billets continue quotable at $36, Youngstown, and standard slabs and billets $35, Youngstown.

Pittsburgh, Feb. 9.—Semifinished steel makers, confident over the strong price position occupied by their products, look upon them as leading the market.. They point to the fact that not only are prices of $35 on 4 x 4-inch rerolling billets and slabs and $36 on sheet bars holding firmly, but specifications against this quarter's contracts are right up to the minute, and users are wanting shipments hurried. Some buyers who finally completed low priced contracts around $33 and $34 have endeavored to extend the tonnage at the same figures. In this they failed. In connection with copper bearing sheet bars, not only is the $36 price adhered to but extras for copper are being strictly followed. Some sheet and tin plate makers are negotiating for second quarter prices on sheet bars but nothing so far has been announced.

Wire rod contract customers not only are taking out tonnage but a few are seeking to increase commitments. Producers are wary about complying, not knowing whether or not they will have enough wire rods left over after taking care of the requirements of their own wire drawing and nail making departments, which they expect will increase shortly. The wire rod price is $45. Skelp is weak at 1.90c and offers of large tonnage would undoubtedly uncover a lower figure. Not much new business is developing.

Cleveland, Feb. 9.—New demand in the market for semifinished material is quiet, and specifications on contracts have been slow in developing. The McKinney Steel Co. still is operating four of its 14 open-hearth furnaces. The quotable market remains $36, valley, in sheet bars, and $35 on standard billets and slabs.

A large northern Ohio sheet maker which recently covered on his sheet bar requirements is reported to have covered for the entire first half.

Philadelphia, Feb. 9.—A local consumer is inquiring for several hundred tons of billets. Prices are unchanged.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 14.50
Boston (dealers)	11.50 to 12.00
Buffalo	16.25 to 16.75
Buffalo, No. 1	17.25 to 17.75
Chicago	13.75 to 14.00
Cincinnati (dealers)	13.00 to 13.50
Cleveland	16.00 to 16.50
Detroit	**14.75 to 15.25**
Eastern Pennsylvania	16.00 to 16.50
Bethlehem delivery	15.50 to 16.00
New York (dealers)	11.75 to 12.25
Pittsburgh	17.50 to 18.00
St. Louis	14.25 to 14.75
Valleys	17.00 to 17.50

COMPRESSED SHEETS

Buffalo	15.75 to 16.25
Chicago	12.25 to 12.75
Cleveland	14.00 to 14.50
Detroit	**12.50 to 13.00**
Pittsburgh	16.00 to 16.50
Valleys	16.00 to 16.50

BUNDLED SHEETS

Buffalo	**14.00 to 14.50**
Cincinnati (dealers)	9.00 to 9.50
Cleveland	**12.50 to 12.75**
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh	15.00 to 15.50
St. Louis	8.50 to 9.00
Valleys	14.00 to 14.50

SHEET CLIPPINGS, LOOSE

Chicago	9.50 to 10.00
Cincinnati	9.00 to 9.50
Detroit	9.75 to 10.25

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Buffalo	18.00 to 18.50
Chicago	18.00 to 18.50
Cincinnati (dealers)	17.50 to 18.00
Cleveland (over 6 ft.)	16.75 to 17.00
Detroit	**17.00 to 17.50**
St. Louis	16.50 to 17.00

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	**14.00 to 14.50**
Buffalo	14.00 to 14.50
Chicago	16.25 to 16.75
Cincinnati (dealers) (net)	9.50 to 10.00
Cleveland	**13.75 to 14.00**
Detroit (net tons)	**13.25 to 13.75**
Eastern Pennsylvania	14.50
New York (dealers)	10.25 to 10.75
Pittsburgh	13.50 to 14.00
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	19.00 to 19.50
Cincinnati (dealers)	17.00 to 17.50
Eastern Pennsylvania	20.00 to 21.00
Pitts. billet and bloom crops	22.00 to 23.00

SHOVELING STEEL

Chicago	13.50 to 14.00
Pittsburgh	14.00 to 14.50
St. Louis	14.25 to 14.75

KNUCKLES, COUPLERS, SPRINGS

Chicago	17.00 to 17.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	20.00 to 21.00
St. Louis	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago (cut)	15.25 to 15.75
Eastern Pennsylvania	17.00 to 17.50
St. Louis	15.50 to 16.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	16.50 to 17.00
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	**13.00 to 14.00**
Boston (dealers)	**13.50 to 14.00**
Buffalo, No. 1	15.00 to 15.50
Buffalo, No. 2	16.00 to 16.50
Chicago, No. 1	14.25 to 14.75
Chicago, No. 2	13.75 to 14.25
Cincinnati, No. 1 (dealers)	9.50 to 10.00
Cleveland, No. 1	13.75 to 14.25
Eastern Pennsylvania	18.00
New York, No. 1 (dealers)	15.50 to 16.00
Pittsburgh, No. 1	14.00 to 14.50
Pittsburgh, No. 2	17.50 to 18.00
St. Louis No. 1	13.50 to 14.00
St. Louis No. 2	14.25 to 14.75

WROUGHT PIPE

Boston (dealers)	11.00 to 11.50
Buffalo	**15.00 to 15.50**
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.25

YARD WROUGHT

Boston	**12.00 to 12.50**
Eastern Pennsylvania	17.00

BUSHELING

Buffalo	15.00 to 15.50
Chicago, No. 1	12.25 to 12.75
Chicago, No. 2	9.00 to 9.50
Cincinnati, No. 1 (dealers)	10.00 to 10.50
Cleveland, No. 1	13.75 to 14.00
Cleveland, No. 2	13.25 to 13.75
Eastern Pennsylvania	**14.00 to 15.00**
Pittsburgh, No. 1	15.50 to 16.00
St. Louis, No. 1	12.25 to 12.75

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston (chemical)	9.00 to 9.50
Buffalo	12.75 to 13.25
Chicago	9.50 to 10.00
Cincinnati (dealers)	9.00 to 9.50
Cleveland	13.00 to 13.50
Detroit	10.25 to 10.75
Eastern Pennsylvania	14.00
New York (dealers)	10.50 to 11.00
Pittsburgh	13.50 to 14.00
St. Louis	8.75 to 9.25
Valleys	**12.50 to 13.00**

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	8.00 to 8.50
Boston (chemical)	11.00 to 11.50
Boston (dealers)	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	11.75 to 12.25
Cincinnati (dealers)	9.00 to 9.50
Cleveland	13.75 to 14.00
Detroit	10.75 to 11.25
Eastern Pennsylvania	14.00 to 14.50
Eastern Pennsylvania (chem.)	15.50 to 16.00
New York (dealers)	**10.75 to 11.25**
Pittsburgh	14.00 to 14.50
St. Louis	11.00 to 11.50
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.00 to 9.50
Buffalo	13.50 to 14.00
Cincinnati (dealers)	8.50 to 9.00
Cleveland	13.50 to 14.00
Detroit	10.75 to 11.25
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	**10.75 to 11.25**
Pittsburgh	14.00 to 14.50

PIPES AND FLUES

Chicago	12.50 to 13.00
Cincinnati (dealers)	8.50 to 9.00
Cleveland	12.25 to 12.50
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	14.00 to 14.50
Chicago	14.75 to 15.25
Cleveland	**13.75 to 14.00**
Eastern Pennsylvania	14.50
New York (dealers)	11.50 to 12.00
St. Louis	13.00 to 13.50

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Buffalo	14.50 to 15.00
Chicago	**10.00 to 10.50**
Cleveland (under 10 in.)	13.50 to 14.00
Cleveland (over 10 in.)	13.50 to 14.00
Detroit	10.50 to 11.00
Pittsburgh	14.00 to 14.50

FORGE SCRAP

Boston (dealers)	9.50 to 10.00
Chicago	18.00 to 18.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	20.50 to 21.00

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	**15.00 to 15.50**
Chicago	**14.50 to 15.00**
Cleveland	14.00 to 14.50
Eastern Pennsylvania	15.00
Pittsburgh	16.50 to 17.00
St. Louis	12.50 to 13.00

STEEL CAR AXLES

Birmingham	19.00 to 19.50
Boston (shipping point)	**18.00 to 19.00**
Buffalo	18.50 to 19.00
Chicago	19.50 to 20.00
Cleveland	**18.00 to 18.50**
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	21.50 to 22.00
St. Louis	18.50 to 19.00

SHAFTING

Boston (shipping point)	17.50 to 18.00
Chicago	19.75 to 20.25
Eastern Pennsylvania	**23.00 to 23.50**
New York (dealers)	18.50 to 19.00
St. Louis	**17.00 to 17.50**

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo, iron	15.50 to 16.00
Bualo, steel	16.50 to 17.00
Chicago, iron	16.50 to 17.00
Chicago, steel	18.00 to 18.50
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	18.00 to 18.50
New York iron (dealers)	14.50 to 15.00
Pittsburgh, iron	18.00 to 18.50
Pittsburgh, steel	20.00 to 21.00
St. Louis, iron	16.50 to 17.00
St. Louis steel	16.50 to 17.00

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 18.00
Boston	**19.00 to 19.50**
Buffalo	16.00 to 16.50
Chicago, No. 1 machinery	18.75 to 19.25
Chicago No. 1 railroad or agricultural	17.75 to 18.25
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.50 to 19.00
Cleveland, cupola	17.50 to 18.00
Detroit (net tons)	**15.00 to 15.50**
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	**15.00 to 15.50**
Pittsburgh, cupola	17.00 to 17.50
San Francisco, delivered	**20.00 to 21.00**
Seattle	**18.00**
St. Louis, railroad	**16.50 to 17.00**
St. Louis, agricultural	**16.25 to 16.75**
St. Louis, machinery	**18.50 to 19.00**
Valleys	**18.00 to 18.50**

HEAVY CAST

Boston	17.50 to 18.00
Buffalo (breakable)	15.00 to 15.50
Cleveland	13.00 to 13.50
Detroit (automobile) (net tons)	**20.00 to 20.50**
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	14.00 to 14.50
Pittsburgh	15.50 to 16.00

MALLEABLE

Boston, railroad	19.50 to 20.00
Buffalo	19.00 to 19.50
Chicago, agricultural	**16.50 to 17.00**
Chicago, railroad	19.50 to 20.00
Cincinnati, railroad (dealers)	15.50 to 16.00
Cincinnati, agricultural (dealers)	**15.00 to 15.50**
Cleveland, agricultural	18.50 to 18.75
Cleveland, railroad	18.00 to 18.50
Detroit	**15.50 to 16.00**
Eastern Pennsylvania, railroad	17.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	14.50 to 15.00
St. Louis railroad	15.50 to 16.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.00 to 18.00
Boston (dealers)	**13.50 to 14.00**
Buffalo	17.00 to 17.50
Chicago	16.25 to 16.75
Cleveland	17.25 to 17.50
Eastern Pennsylvania	17.50 to 18.00
New York	14.50 to 15.00
Pittsburgh district	19.50 to 20.00
St. Louis	16.50 to 17.00

LOCOMOTIVE TIRES

Chicago, No. 1	**18.00 to 18.50**
Chicago, cut	18.00 to 18.50
St. Louis, No. 1	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	17.00 to 17.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	20.00 to 21.00

Scrap

Prices Continue to Lag With Small Buying and Large Supplies Depressing Market

CONTINUED decline in prices marks the iron and steel scrap market in all centers, losses of 25 to 50 cents per ton being taken by prices of almost all grades. Consumers refuse to buy except in small lots and production is heavy. Dealers seem to have deserted their support of the market and are not giving it support. Some distress tonnage has appeared.

Chicago, Feb. 9.—Iron and steel scrap has lost more ground, probably 25 cents a ton all around, and willingness of some dealers to sell at the market indicates conviction bottom has not been touched. Consumers continue to buy only necessary material, and the heavy volume of scrap being produced hangs over the market. Heavy melting steel is quoted at $13.75 to $14, and some warrant exists for a 25-cent cut. Dealers are trading freely in steel at $14 and a melter is turning down offers of $14.25. A Peoria, Ill., wire maker has bought steel from the Rock Island and Burlington railroads for $14.25, delivered. Dealers can buy rerolling rails for $16.50. Several thousand freight cars have been sold by the railroads, adding about 15,000 tons of scrap to the visible supply. Milwaukee melters are minimizing purchases because May 1 is tax day. Scrap trade sentiment is unanimously bearish and some of the larger dealers claim to see no improvement for at least 90 days.

Boston, Feb. 9.—Most grades of iron and steel scrap have declined further during the past week, and buying is listless. Two hundred tons of rerolling rails were sold at $13 shipping point. The principal consumer of shafting has dropped offers $1 a ton during the week.

New York, Feb. 9.—Although stormy weather has tended to complicate the handling of scrap and has emphasized the shortage of cars, consumers appear content to hold off in anticipation of an adjustment in conditions. Trading over the past week has been perhaps the dullest this year. Following the general decline of a week ago, prices are unchanged, but are weak in tone, indicating that the downward movement which set in about a month ago has not been terminated. Borings and turnings appear to be among the few grades showing any strength at this time.

Philadelphia, Feb. 9.—Buying of iron and steel scrap is confined to scattered tonnages making a small total. Several mills bought enough in December to last through first quarter. Prices are distinctly easier.

Pittsburgh, Feb. 9.—Delay continues to be employed by scrap consumers who usually fill their needs in this territory. Buying is of small lots only whenever bargain prices are available. As a result, further weakness is shown and while some dealer sales of heavy melting steel are noted at $17.50, consumers have not yet been able to pick up large tonnages at that level. Today however, they are offering to pay only $17. The heavy melting steel on the Pennsylvania railroad scrap list brought a little less than $18 in one case, and in another above $18 was paid to cover a short tonnage. Specialties brought about $20.75 to $21.25. Several grades are down 50 cents since late last week, including machine shop turnings, cast iron borings and borings and turnings for blast furnace use.

Buffalo, Feb. 9.—Dealers are losing confidence in the scrap market. One offer of $16.50 is reported to have been made in the district for heavy melting steel and another of $17 for strictly No. 1 material. Dealers are buying sparingly. A new offer of about $14.25 is reported for stove plate. Former sales were at $15. Turnings are considerably lower and there have been fractional recessions in practically all prices.

Cleveland, Feb. 10.—Iron and steel scrap is almost wholly lacking in life in this district. Consumers turn down practically all offers of dealers and the latter are having difficulty in realizing on their holdings. Apparently over production is at the root of the dullness and the outlook is not encouraging. Prices continue weak, several grades having been marked down in the past several days.

Cincinnati, Feb. 9.—The iron and steel scrap market is decidedly weak. Consumers are buying virtually nothing and in many instances are holding up shipments. Railroads are offering larger tonnages than for several weeks. Prices display weak tendencies and many of the larger dealers are expecting the market to go lower.

St. Louis, Feb. 8.—Dullness and lower prices prevail in iron and steel scrap. Consumers refuse to become interested, and dealers complain it is difficult to sell anything, even at concessions. The melt is well sustained, even increasing in some instances, but mills and foundries are waiting to see what the next sixty days will develop in the way of new orders for their products before taking on more raw materials.

Sheets

Automobile Stock Marked Down $2—Other Grades Also Easier —Operating Schedules Lower

SHEET prices are easier, and operations are on a lower scale. The most pronounced change in prices is a reduction of $2, from 4.50c to 4.40c on fine finished material, due to temporary curtailment by a leading motorcar manufacturer. Galvanized sheets are available at 4.50c, Pittsburgh; black at 3.25c and blue annealed at 2.45c, although higher prices are done.

SHEET PRICES, PAGE 410

Youngstown, O., Feb. 9.—High grade sheet prices have declined $2 a ton to 4.40c for No. 22 gage after several weeks' effort on the part of large tonnage consumers to buy at the fourth quarter level. The responsibility for the break in the market is traceable to certain producers whose order books were filled largely with the requirements of a well known automobile manufacturer. Production schedules at the motor car plant recently were cut down, which left the sheet producers with little tonnage to roll. Consequently the Detroit district was solicited for business and some of the large buyers who had deferred purchases were successful in obtaining a 4.40c price. Business previously on the books of some producers at 4.50c has been marked down $2 a ton to conform to the current market of 4.40c. Prices governing the sales of common sheets are unchanged as far as can be determined. Specifications have decreased to the point where rolling schedules are difficult to determine. The policy foremost in the minds of producers in this district is to curtail operation rather than cut present quotations. This is reflected in the operating rate this week, which at 70 per cent represents a loss of 15 per cent compared with last week. Two plants are down entirely, lacking certain specifications to round out hot mill schedules. Quotations on new business include 3.35c for black, 2.50c for blue annealed and 4.60c for galvanized. Inquiry is at a low ebb.

Boston, Feb. 9.—Specifications continue to show improvement for galvanized and black sheets. Prices are firm at 4.60c, Pittsburgh, for galvanized and 3.30c for black.

Philadelphia, Feb. 9.—Galvanized sheets are firm at 4.60c, Pittsburgh, but occasionally exceptions are noted. Demand generally is sufficient to enable mills to maintain their schedules.

Pittsburgh, Feb. 9.—Lack of specifications adversely affected sheet mill operations in the past week, and be-

tween 75 and 80 per cent now is considered the general average. The American Sheet & Tin Plate Co. has placed more than 1500 tons of blue annealed, several hundred tons of black, galvanized, etc., and one or two small orders for full finished at the full market prices. Yielding to pressure, various independent manufacturers have sold full finished sheets at 4.40c, compared with the full market figure of 4.50c. On the other grades, concessions are less pronounced although galvanized is available at 4.50c against 4.60c, the minimum up to a few days ago; and black at 3.25c instead of 3.35c, the latter having been the firm market level up until recently. Blue annealed is not subjected to as much cutting, but occasionally $1 is deducted, making the market quotable 2.45c to 2.50c.

Buffalo, Feb. 9.—Liberal purchases of sheets for first and second quarter delivery have been made by automobile and metal furniture manufacturers, and unfilled tonnages have increased since Feb. 1. Current prices are 3.35c, Pittsburgh, for black sheets, and 4.60c for galvanized.

Chicago, Feb. 9.—Sheet specifications have improved a trifle the past week but still fall short of the volume warranted by the good order books of western mills. Blue annealed sheets are an exception as western makers have three to four months rolling on hand. Valley makers are competing more actively but are mainly equalizing Chicago delivered prices which are 4.75c on galvanized, 3.50c on black and 2.65c on blue annealed.

St. Louis, Feb. 9.—Except for galvanized, specifications on sheets have been in satisfactory volume, and shipments large. Some new orders are reported, particularly for blue annealed. The leading local producer continues full time operations, and will maintain that rate through February. Prices are unchanged. Shipments of sheets by the National Enameling & Stamping Co. in 1925, it is announced, were the largest in history and exceeded the previous banner year of 1923.

Tin Plate

Specifications Continue at High Rate—New Orders Light

TIN PLATE PRICES, PAGE 410

Pittsburgh, Feb. 9.—Tin plate manufacturers continue to make every effort to ship in accordance with liberal specifications they have been receiving. These constitute everything makers can produce between now and April 1 and already some April specifications are being made up. Outside of shipments against contracts, for general line and food packing purposes, the tin plate market is featureless. Operations continue to average around 90 per cent or sligthly higher. Attractive stock plate is difficult to locate. The open market price is $5.50, Pittsburgh.

Strip Steel

Further Release of Orders Gives Market Impetus

STRIP PRICES, PAGE 410

Pittsburgh, Feb. 9.—Further improvement in strip steel demand is due to some release of orders by the automotive industry. So far, this is confined almost exclusively to hot strips, on which there have been no departure from the base price, 2.30c. So far as can be learned here, the 3.90c price on cold is generally quoted. Consuming lines other than automotive likewise being active and February promises to keep up well to the January rate of betterment over that period a year ago. January was at least 25 per cent better than that month in 1925 and February so far is ahead of the same period last year, perhaps by 15 per cent.

The S. I. B. Sheet Metal Works Co., Indianapolis, Ind., has filed a certificate increasing its capital stock from $5000 to $15,000, all of the increase being common stock.

Pipe

Oil Country Buying Improves Mill Condition—Cast Makers Have Good Backlogs

PIPE mills are booking more tonnage as oil country goods demand increases. Line pipe inquiries also are better. Wrought pipe buying is heavy. Cast iron pipe makers in Chicago are booked from 60 to 75 days ahead. Awards include 3700 tons at St. Louis. Inquiries are featured by 6000 to 8000 tons for the water department at New York. Prices are steady.

PIPE PRICES, PAGE 410 AND 444

Pittsburgh, Feb. 9.—Major improvement is coming to the pipe industry due to the large number of orders being placed for oil country goods. Orders for 25 to 200 tons at a time are growing more numerous. Line pipe is showing some improvement with individual orders involving 25 to 100 miles of the more popular sizes coming from the Far West. Producers expect that 1926 will bring interest developments in this line and that present low oil production, with favorable prices, along with increased consumption, will bring extensive drilling operations. For the deeper wells in California, some interesting orders for seamless casing have been placed and it is expected that some of the old fields in other territories will be reworked to deeper sands in which event seamless casing will be utilized.

Standard full weight merchant pipe orders also are picking up somewhat but large tonnages are not frequent. Jobbers are rounding out their stocks. Prices on pipe generally are firm but boiler tubes and other tubing are subject to considerable shading.

Demand for wrought iron pipe is heavy. The A. M. Byers Co. is operating 100 per cent or 88 puddling furnaces.

Boston, Feb. 9.—Large sizes of pipe have softened in the New England market. Municipalities are slow to call for bids on 1926 tonnage. Private buying holds up well. Small sizes are firm.

New York, Feb. 9.—Cast pipe is in fair demnad. While municipalities continue to move slowly in placing their requirements, private companies are fairly active. The local department of water supply is expected in the market shortly for 6000 to 8000 tons. This lot has been under contemplation for several weeks and it is understood that specifications are about completed. Prices on water pipe continue firm with the exception of those on some of the larger sizes. By careful trading, it is possible to obtain concessions of $2 to $3 in some quarters.

Chicago, Feb. 9.—Makers of cast iron pipe are going into the middle of February booked much farther ahead than usual. Order books of most makers approximate 60 to 75 days, while the largest maker is booked ahead a half year on some of the smaller sizes. Prices are unstable and bids vary according to the need of makers for specific sizes. The 3700 tons of 3 to 36-inch pipe at St. Louis went for slightly under $41, Birmingham. This single price of $41, Birmingham, or $49.20, Chicago, for 6-inch and larger and $4 additional for 4-inch comes close to representing the market.

Birmingham, Ala., Feb. 8.—Cast iron pipe production is beginning to increase over that of the last 60 days. No surplus pressure pipe is piled up on yards here. Spring buying promises to be greater than at same period last year.

CONTRACTS PLACED

500 tons, standard pipe for Coast Counties Gas Co., San Francisco, to Grinnell Co.

470 tons, 8-inch joint pipe for Los Angeles, Spec. 786-C, to Crane Co.

750 tons, 8-inch lap weld pipe for Los Angeles, to Crane Co.

500 tons, Aberdeen, Calif., to B. Nicoll & Co., representing French makers.

175 tons, 20-inch class C and 12-inch de lavaud for San Bernardino, Calif., to United States Cast Iron Pipe & Foundry Co.

400 tons, centrifugal cast pipe, for Spokane,

Wash., to United States Cast Iron Pipe & Foundry Co.
400 tons, Oswego, Oreg., to Oregon Iron & Steel Co.
1200 tons, chiefly 16-inch pipe, for the department of water supply, gas and electricity, New York, formally placed through the Gregory Construction Co., with the Donaldson Iron Works.
150 tons, water pipe, Jersey City, N. J., to R. D. Wood & Co.
800 tons, gas pipe, Nassau & Suffolk Gas Co., Hempstead, L. I., to B. Nicoll & Co., representing French makers.
2200 tons, gas pipe for the Utica Gas & Electric Co., Utica, N. Y., and for the Adirondacks Light & Power Co., Schenectady, N. Y., to B. Nicoll & Co., representing French makers.
1000 tons, water pipe for two or three cities along the Pacific Coast, to B. Nicoll & Co.
1000 tons, water pipe, Mexico, to B. Nicoll & Co.
3700 tons, St. Louis, 2500 tons to United States Cast Iron Pipe & Foundry Co. and 1200 tons to National Cast Iron Pipe Co.
900 tons, Harvey, Ill., to the United States Cast Iron Pipe & Foundry Co.

CONTRACTS PENDING

457 tons, 20-inch class B for Federal avenue job, Seattle; expected to go to French maker.
150 tons, water extension, Puyallup, Wash.; pending.
100 tons, alternate wood and cast pipe bids, University district, Tacoma, Wash.; pending.
457 tons, Federal avenue extension, Seattle; bids opened.
100 tons, 8-inch class B pipe, Eureka, Calif.; bids in Feb. 16.
600 tons, St. Paul; bids in.
200 tons, Toledo, O.; general contract let to J. M. Monie, St. Louis.

Bolts, Nuts, Rivets

Bolts and Nuts Steady but Rivets Show Weak Spots

NUT AND BOLT PRICES, PAGE 410

Chicago, Feb. 9.—Jobbers and automobile and implement makers are specifying bolts and nuts more freely and each week this year has seen improvement. Prices are holding well on the basis of 50, 10 and 10 off for large machine bolts and the market appears as encouraging as at any time in the past six months. Western bolt and nut makers are operating at 70 to 75 per cent. Small rivets still are quoted on a range of 70 and 10 to 70 and 5 off but barge rivets display firmness at 2.75c.

Cleveland, Feb. 9.—The demand for nuts and bolts has picked up briskly during the last week or ten days. Some makers here now are doing close to capacity business. The automotive interest are coming into the market freely. Quotations are firm with large machine bolts 50, 10 and 10 per cent off list. Rivet specifications against contracts continue at a fair rate but new business is somewhat slow. The 2.60c quotation still obtains.

The importance of standardizing materials now being used industrially was stressed by T. D. Lynch, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., before members of the Pittsburgh chapter of the American Society for Steel Treating at their meeting Feb. 4, in the bureau of mines building.

Bars

Demand Is Heavy Though Somewhat Easier—Deliveries Are Deferred—Prices Firm

WHILE steel bars have met with some slight check in demand, sufficient business is coming to mills to keep them well engaged and deliveries are difficult in some cases. Specifications in most centers are in better volume than in January and steadier demand is expected than was experienced early last year. Important producers are operating at full capacity.

BAR PRICES, PAGE 410

Chicago, Feb. 9.—Makers of soft steel bars see first half year shaping up wholly different from a year ago. Then consumers pressed for tonnage from Jan. 1 on, culminating in a March that broke all production records, followed by a quiet second quarter. Now consumers are taking out a good tonnage of bars but they are not so urgent and are slow in placing their future needs. It looks as if the first half tonnage of 1926 will not be far behind 1925, but it will be much more evenly distributed. New business in bars the past week has just topped shipments. Reinforcing bar warehouses, after refusing to take in tonnage in December, are pressing for stock and find that the rolling following the present one is not scheduled until April. Chicago mills are maintaining 2.10c, Chicago, without difficulty in Chicago proper but cannot go far South or East. One maker believes Pittsburgh will advance $2 for second quarter, to which Chicago would follow suit. An advance, however, is not generally looked for.

Rail steel bars and bar iron are unchanged at 2.00c Chicago, with incoming business not quite up to shipments, especially in the case of bar iron. Rail steel books are comfortable.

Boston, Feb. 9.—Bar sales of the past week were well up to the January average and prices are firm at 2.00c Pittsburgh or 2.365c delivered. Confidence is shown by large stocks in the hands of warehouses.

Philadelphia, Feb. 9.—Specifications for steel bars are good, but not equal to shipments. The price is firm at 2.00c, Pittsburgh. Bar iron mills are enjoying the best demand since a year ago, at 1.90c, Pittsburgh, which is firm.

Pittsburgh, Feb. 9.—While merchant steel bar specifications have fallen off a trifle, prominent makers report enough business assured for the present week to send February above the same period last month. Outside of the firmness in the 2.00c price, the most encouraging feature is that the daily average of specifications this year is ahead of the same period last year. Demand is diversified and latterly automotive tonnage has increased. Bar mills of the Carnegie Steel Co., Youngstown Sheet & Tube Co., Jones & Laughlin Steel Corp., and other makers are operating practically on a 100 per cent basis. While many orders are smaller than they were last November and December occasionally an attractive tonnage comes through such as one placed yesterday with a large independent, 625 tons of one of the popular sizes of rounds.

Refined iron bar demand is better and prices firmer 3.00c to 4.50c.

Cleveland, Feb. 9.—The run of tonnage is keeping up with no particularly large amount of new business being placed. Incoming orders largely are in the form of specifications. So far February is holding its own with January which was an excellent month. Weakness in the sheet situation has caused some buyers to check up more critically prices in other hot rolled products but bars are holding their own steadily at 2.19c, Cleveland or 2.00c, Pittsburgh. Some of the larger mills remain two months behind in band deliveries.

Hoops and Bands

Demand Continues Strong From Variety of Consumers

HOOP PRICES, PAGE 410

Pittsburgh, Feb. 9.—Uninterrupted and fairly heavy demand for hoops and bands still is the rule. Specifications continue to come from diversified industries and within the past week additional improvement is noted in automobile demand. The price is unchanged and unquestioned, firm at 2.50c.

Cold Finished Steel

Splendid Deliveries Give Strength but Price Not Satisfactory

Pittsburgh, Feb. 9.—Splendid deliveries continue the rule among cold bar finishers in this and nearby districts. Makers are able to maintain an average operating rate of about 80 or 85 per cent. January was ahead of that month in 1925 and February so far is ahead of the same period a year ago. The price of 2.50c leaves much to be desired, makers claim, and they indicate they expect a higher level for second quarter.

Structural Shapes

Railroad Bridgework Takes Center of Market as Commercial Activity Drops in New York—Heavy Spring Demand Expected

AWARDS and inquiries in the structural market are featured by railroad bridgework, and similar requirements. Two bridge projects involve 3000 tons and transmission towers 4900 tons. Action is slow in developing on the 18,000 tons for the union terminals, Cleveland, on which bids went in Feb. 1. Allied work brings the total involved to about 25,000 tons. Commercial demand, such as offices, lofts, and apartments, has slumped considerably in New York, January being less than half of December in tonnage and far under the awards in October.

Prices generally are steady. Buffalo fabricators dropped $2 a ton to 2.065c, Buffalo, in effort to build up backlogs. Chicago district prices have weakened from eastern competition.

STRUCTURAL SHAPE PRICES, PAGE 410

New York, Feb. 9.—Bridgework features demand for structural steel. While there are a few large tonnages, orders and inquiries for bridges are more numerous than in some time. General commercial work, such as lofts, apartments, offices, etc., is unusually light, a fact attributed in a measure to the hesitancy of buyers to go ahead while the wage question in the building trades continued unsettled. Plain material may be quoted around 1.90c, Pittsburgh, on fair tonnages.

Boston, Feb. 9.—Shape demand has fallen off somewhat but prospective tonnage shows heavy volume. Plain material prices are unchanged at 1.90c Pittsburgh.

Philadelphia, Feb. 9.—Less shape business is being done. Bethlehem Steel Co. is operating its special sections mill full, but production of standard shapes by eastern mills is at 60 to 70 per cent of capacity. Prices on standard shapes range from 1.80c to 2.05c base eastern mill, with Pittsburgh quotations usually 1.90c to 2.00c.

Pittsburgh, Feb. 9.—Featured in the structural awards this week are 4900 tons for transmission towers for the Niagara Falls-Lockport, N. Y., territory, divided between two local fabricators and the letting of the Midland, Pa. mill building for the Pittsburgh Crucible Steel Co., 1200 tons. Numerous small lots are up. Plain material prices are firm at 1.90c to 2.00c but prices on material fabricated and erected still are weak due to the keen competition.

Cleveland, Feb. 9.—Local structural activity is prospective, considerable tonnage being pending. Awards involve but a few hundred tons in all for the week, but active inquiries require about 30,000 tons, of which 18,000 tons is for the tower building of the Union terminals. Plain material continues steady at 2.09c to 2.19c, Cleveland or 1.90c to 2.00c, Pittsburgh.

Chicago, Feb. 9.—January building permits in Chicago totaled $18,500,000, or a decrease of 15 per cent from last January, and actual structural steel awards so far this year have kept pace. Large jobs in Chicago proper which may develop into awards shortly approximate 15,000 tons. Railroads are more active, the Missouri, Kansas & Texas placing 1200 tons for bridges and the St. Louis-San Francisco inquiring for a like tonnage. The leading independent has its structural mill booked solid well into the summer. Beams are quoted at 2.10c, Chicago, but this level is none too strong on large work and suffers when pitted against eastern competition in nearby territory.

Buffalo, Feb. 9.—Shapemakers are trying to build up backlogs by lower prices, and are quoting 2.065c, Buffalo, on large lots. Some fair business has been booked at this price but buying has not reached proportions likely to restore old prices of 2.165c to 2.265c, it is believed.

Awards Compared

	Tons
Awards this week	20,674
Awards last week	29,145
Awards two weeks ago	22,825
Awards this week in 1925	27,709
Average weekly awards, Jan.	21,498
Average weekly awards, 1926	23,027
Total awards, 1925, to same date	230,248
Total awards, to date, 1926	115,137

CONTRACTS PLACED

3000 tons, Hotel Detroit, Detroit; to independent fabricator. Lundoff-Bicknell Co., Cleveland, general contractor.

2200 to 2500 tons, flexible transmission towers for the Niagara-Lockport Power Co., Lockport, N. Y., to the American Bridge Co.

2000 tons, 21-story loft, Twenty-eighth street and Seventh avenue and apartment in East Seventy-second street, New York, to the Taylor Fichter Steel Construction Co.

1700 tons, rigid transmission towers for the Niagara-Lockport Power Co., to the Riter-Conley Co.

1600 tons, Architects' building, 101 Park avenue, New York, to McClintic-Marshall Co.

1200 tons, plant for the Pittsburgh Crucible Steel Co., Midland, Pa., to the American Bridge Co.

1200 tons, 1926 bridge program of Missouri, Kansas & Texas railroad, to Kansas City Bridge Co.

1000 tons, bridge for the Lackawanna railroad, to the American Bridge Co.

100 tons, about 80 tons for Lustro Coated Sheets Co., Pittsburgh, and 18 tons for addition to plant of Electrical Products Corp., San Francisco, through the Austin Co. to unnamed fabricators.

112 tons, plant additions for Pacific Coast Forge Co. Inc., Seattle, through the Austin Co., to unnamed fabricator.

120 tons, state training school, Chehalis, Wash., to Minneapolis Steel & Machinery Co.

275 tons, new concrete pole plant of Westinghouse Electric & Mfg. Co. at St. Louis, to Mississippi Valley Structural Steel Co.

116 tons, theater, Haight near Fillmore street, San Francisco, to Schraders Iron Works.

200 tons, bulkhead for California. Bridge & Tunnel Co., San Francisco, to United States Steel Products Co.

800 tons, building for Ohio State Savings bank, Columbus, O., through D. W. McGrath Construction Co., that city, to unstated contractor.

150 tons, power house, Tampa, Fla., to the Virginia Bridge & Iron Co.

750 tons, hotel, Fort Meyer, Fla., to Bethlehem Fabricators Inc.

275 tons, Pennsylvania railroad bridge, to the Fort Pitt Bridge Works.

125 tons, bridge for the Lehigh Valley railroad, to an unnamed fabricator.

175 tons, bridge for the Atlantic Coast Line, to the American Bridge Co.

675 tons, hotel, 497 Lexington avenue, for the Forty Seven Lexington Avenue Corp., New York, to Bethlehem Fabricators Inc.

167 tons, apartment for the Botanic Gardens Apartments Inc., 934 Carroll street, Brooklyn, N. Y., to Gaynor & Rosenblum.

400 tons, Catholic Boys' high school, Pittsburgh,, to the Jones & Laughlin Steel Corp., through Henry Busse & Co., general contractors.

200 tons, miscellaneous work including 100 tons addition to the plant of the Crandall-McKenzie Co., Pittsburgh, to the Guibert Steel Co.

900 tons, two highway spans over Yazoo river, Vicksburg, Miss., to Virginia Bridge & Iron Co.

240 tons, Fairmount Jockey club, East St. Louis, Ill., to St. Louis Structural Steel Co.

225 tons, Wahiawa bridge, Honolulu, T. H., to Virginia Bridge & Iron Co.

100 tons, building for Aluminum Goods Mfg. Co., Two Rivers, Wis., to Milwaukee Bridge Co.

Few hundred tons, apartment Ninth avenue, New York, to the Easton Structural Steel Co.

Few hundred tons, post office in West Fifty-second street, New York, to the Geo. A. Just Co.

Unstated tonnage, garage for S. C. Levine, 1572-86 Bedford avenue, Brooklyn, N. Y., to Lehigh Structural Steel Co.

CONTRACTS PENDING

2000 tons, plant and office building, Press Publishing Co., Second avenue and Short street, Pittsburgh; general contract awarded the W. T. Grange Construction Co. Bids close on the steel this week.

2000 tons, estimated, 21-story building for the Pittsburgh Insurance Exchange Inc., Fourth avenue, Pittsburgh; bids about to be asked; general contract understood to have been given Boyle & Robertson, Washington, Pa.

2000 tons, Parker House hotel, Boston; bids being taken.
1600 tons, warehouse for the Owens Bottle Works, Charleston, W. Va.; bids filed Feb. 6.
1600 tons, warehouse for the H. J. Heinz Co., Pittsburgh; action about to be taken.
1400 tons, buildings for Crane Co., Chicago; pending.
1400 tons, 16-story hotel, 319 West Forty-eighth street, for MacKammer, New York; pending.
1200 tons, bridges, St. Louis-San Francisco railroad; pending.
1000 tons, Garfield Junior High school, Johnstown, Pa.; bids being compiled.
1000 tons, or more, addition to the Pennsylvania station, Seventieth, Grant and Liberty streets, Pittsburgh; sketches being prepared.
1000 tons, World war memorial, Indianapolis; Walker & Weeks, Cleveland, architects; bids in.
1000 tons, Miles theater, Detroit; bids in.
1000 tons, steel, steel castings, etc., changing and adding to dam No. 41 Ohio river, Louisville, Ky., sections A and B; bids being compiled by Col. G. R. Spalding, United States engineers, Louisville; Byllesby Co. low bidder.
800 tons, dam at Lewiston, Idaho, by Inland Power & Light Co.; bids in March 1.
200 tons, bridges for highway purposes, State of Indiana; bids close Feb. 10.
500 tons, stone crusher building at Monroe, Mich., for France Stone Co., Toledo, O.; bids being taken.
200 tons, Wilson school, Cleveland; Schirmer-O'Hara Co., general contractor.
400 tons, Webster Hall hotel, Fifth avenue, Pittsburgh; action to take place this week.
200 tons, Famous Department Store, A. J. Weil, McKeesport, Pa.; bids closed Feb. 9.
500 tons, estimated, Y. M. C. A. building, North avenue and Monterey street, Northside, Pittsburgh; plans being drawn.
600 tons, loft for MacKammer at 230 West Thirty-ninth street, New York; pending.
650 tons, 15-story apartment for Eighteen Hundred Sixty-One University Avenue Corp., 9 East Ninety-sixth street, New York; pending.
400 tons, nurses' home, Fordham hospital, New York; pending.
250 tons, Bronx court house, New York; award expected this week.
600 tons, Philip Freshman building, Court street, Brooklyn, N. Y.; pending.
500 tons, Duncan-Goodell Co. building, Worcester, Mass.; bids in.
400 tons, mill building, New Bedford, Mass.; bids being taken.
800 tons, bridges, Southern railway; bids asked.
500 tons, bridges, Long Island railroad, New York; pending.
275 tons, state highway bridge, Clinton, N. J.; pending.
500 tons, bridge for the Pennsylvania railroad at Long Island City, Long Island; pending.
100 tons, state highway bridge, Virginia; pending.
500 tons, buildings for the Public Service Corp., Newark, N. J.; bids asked.
350 tons, power house, for the DuPont Engineering Co., Weidman, N. J.; pending.
300 tons, municipal highway bridge, Philadelphia; bids asked.
350 tons, manufacturing building, Paterson, N. J.; pending.
100 tons, bridge over Rio Grande river, Eagle Pass, Tex.; pending.
Tonnage unstated, Owen Bucket Co. plant, Cleveland; Geo. S. Rider & Co. engineers; bids in.

Repairs Near Completion

Pittsburgh, Feb. 9.—Plans for revamping the steelworks and plant of the Forged Steel Wheel Co., Butler, Pa., recently bought by the Columbia Steel Co., Elyria, O., are fast taking form. The 10 open hearths are being repaired and are about to be placed in operation; the slabbing mill will be operated and an entry immediately made into the current slab market. Bids are being taken on additional rolling mill equipment including a universal mill and some single 30-inch sheet-strip mills. As previously announced, the company plans the manufacture of 30 x 250-inch strip steel.

Concrete Bars

Renewed Interest Shown in Concrete Market—Inquiries Heavier

INCREASING inquiries lend a healthier tone to the concrete bar market. Awards still are confined to miscellaneous small tonnages. Pending work involves a good tonnage and much of this is expected to develop shortly. Two Philadelphia schools have been awarded to a jobber who will purchase 1200 tons of European steel. Prices are unchanged.

REINFORCING BAR PRICES, PAGE 410

Chicago, Feb. 9.—Building permits in Chicago in January ran about 10 per cent under the total for January, 1925, and awards of reinforcing bars kept pace. Pending work has expanded each week since Jan. 1. Five hundred tons or more of Illinois road work is expected to develop by the end of February. Warehouse stocks of bars are now the most complete in three or four months. Billet reinforcing bars are quoted at 2.60c, Chicago warehouse, and rail steel at 2.00c.

Boston, Feb. 9.—More concrete bar tonnage is in prospect than a week ago. Several buildings have been switched from structural steel to concrete. New England dealers are showing confidence by building up heavy stocks. The Boston warehouse price is unchanged at 3.00c.

Buffalo, Feb. 9.—Interest in reinforcing bars is increasing and some good sized lots will be purchased within the next two weeks. Inquiries include 500 tons for a Buffalo grain elevator and several of smaller size. Prices are unchanged at 2.265c Buffalo for mill lots and 2.75c Buffalo for small lots from stocks.

Pittsburgh, Feb. 9.—Awards of large quantities of reinforcing bars lately have been few but several large tonnages are about to be closed. Several small jobs have been let. The mill price is 2.00c, Pittsburgh.

Cleveland, Feb. 9.—Action is being delayed on several large concrete bar projects here. Steel is about to be placed on 2300 tons of bars for the Willow sewage disposal plant for which Mellon-Stuart Co., Pittsburgh, is general contractor. Small lot movement continues fair. New billet bar prices are 2.19c, to 2.30c, Cleveland, although some 2.09c tonnage is rumored. Rail steel holds at 1.85c to 1.90c, mill, with 1.80c available on attractive tonnages.

Awards Compared

	Tons
Awards this week	4,344
Awards last week	4,130
Awards two weeks ago	5,900
Awards this week in 1925	9,236
Average weekly awards, Jan.	4,342
Average weekly awards, 1926	4,299
Total awards, 1925 to same date	30,334
Total awards, 1926 to date	21,499

CONTRACTS PLACED

100 tons, Court square building, New York, to McClintic-Marshall Co.
109 tons, West Side Y. M. C. A. building, Chicago, to Jones & Laughlin Steel Corp.
400 tons, Michigan-Lake building, Chicago, to Olney J. Dean & Co. Paschen Bros., 111 West Washington street, Chicago, contractors.
210 tons, junior high school, Terre Haute, Ind., to Hugh J. Baker & Co.
175 tons, Dearborn and Maple apartment, Chicago, to Inland Steel Co. Odlefest & Williams, 605 North Michigan avenue, Chicago, architects.
200 tons, addition to plant of the Tinkertoy, Evanston, Ill., to Inland Steel Co.
100 tons, new Isolation hospital at St. Louis, to the Laclede Steel Co.
300 tons, hotel Pickwick, San Diego, Calif., to unnamed jobber.
300 tons, Vista avenue bridge, Portland, to unnamed interest.
1200 tons, schools at Twenty-sixth and Cumberland streets, and Sixty-sixth and Elmwood streets, Philadelphia, through Cramp & Co. general contractors, to F. R. Phillips & Sons Co. for importation from Europe.
320 tons, Clark-Monroe building, Chicago, to Olney J. Dean & Co. Frank D. Chase Inc., 720 North Michigan avenue, that city, contractor.
170 tons, Astor Street Co-operative apartment, Chicago, through Alfred Alschuler, 28 East Jackson street, architect, to Olney J. Dean & Co.
300 tons, Jacob Kulp building, Chicago, through Alfred Alschuler, 28 East Jackson street, architect, to Olney J. Dean & Co.
200 tons, N. Shure building, Chicago, through Alfred Alschuler, 28 East Jackson street, architect, to Olney J. Dean & Co.
200 tons, Security bank, Waukegan, Ill., through Alfred Alschuler, 28 East Jackson street, Chicago, to Olney J. Dean & Co.
100 tons, road project, Herkimer county, N. Y., to unstated Buffalo fabricator.

CONTRACTS PENDING

220 tons, Masonic home, Zenith, near Seattle; pending.
600 tons, war memorial at Indianapolis, pending.
350 tons, Starved Rock, Ill., lock and dam for Illinois waterway; Woods Bros. Construction Co., Lincoln, Nebr., general contractor.
100 tons, Duncan-Goodell Co. building, Worcester, Mass.; bids being taken.
300 tons, Y. M. C. A. building, Portland, Me.; bids being taken.
400 tons, Parker House hotel, Boston; bids being taken.
500 tons, addition to Saskatchewan elevator, Buffalo, N. Y.; D. E. Horton Construction Co., that city, contractor.
700 tons, Webster Hall hotel, Pittsburgh; action expected this week.
100 tons, dam No. 41 Ohio river, Louisville, Ky.; bids in. The Byllesby Co. is low bidder.

Star Iron & Metal Co., New York, has increased its capital from $10,000 to $50,000.

Rails, Cars

Car Interest More Active—Place 5041 Refrigerators—January Awards Total 8830

STIMULATED by award of 5041 refrigerators by the Pacific Fruit Express, the railroad equipment market is more active this week. Miscellaneous other placements total over 1000. New inquiry includes 1000 for the Western Maryland. Locomotive buying is confined to small lots. January car awards total 8830. Rail orders total about 22,000 tons.

RAILROAD TRACK MATERIAL PRICES, PAGE 410

New York, Feb. 9.—Domestic freight car awards in January were 8830, compared with 16,885 for December. It is the lowest monthly total since September 1925, when 7905 cars were placed. Following is a comparative statement:

January, 1926	8,830
December	16,885
November	11,685
October	11,145
September	7,905
August	2,875
July	800
June	1,835
May	6,985
April	5,060
March	4,730
February	5,510
January, 1925	1,695
1923 total	103,487
1924 total	144,425
1925 total	77,110

Car buying in the eastern territory of late has been restricted. Inquiry is featured by a list of 1000 cars for the Western Maryland. Locomotive buying has been light. The Romanian inquiry for 1000 freight cars has been withdrawn due, it is said, to inability to finance their purchase here.

Chicago, Feb. 9. — Freight car awards in the past week totaled 5700, including the 5041 refrigerator cars by the Pacific Fruit Express. Of the latter cars all but 1000 will be built in this district and the leading interest will book 40,000 tons of heavy steel for the order. Repair work placed by the Southern railway with the Mt. Vernon Car Mfg. Co. requires 2500 tons of steel.

The Santa Fe and Southern Pacific are inquiring for a total of 71 passenger cars. Freight car inquiry is limited to 2350 by the Illinois Central, 2000 to 2500 by the Seaboard Air Line and 1600 by the Southern Pacific. The Chicago & Eastern Illinois may act on its old inquiry for 500 hoppers and a similar inquiry may emanate from the Burlington. The Standard Steel Car Co., has re-opened the freight car department of its Hammond, Ind., plant.

Recent rail orders aggregate 20,000 tons, including 14,000 tons placed with local mills by the Cotton Belt. The exercise of its option by the New York Central brings 30,000 tons of rails plus the required angle bars to this district. Last week's track fastening orders include 4000 tons of angle bars. Tie plates are quoted at $45, Chicago.

Pittsburgh, Feb. 9.—Billet-rolled light rail makers attest that orders have been somewhat expedited by coal mine extension. February so far shows a 10 to 25 per cent increase over the same period in January. Additional weakness was encountered in prices this past week, mainly from the makers of rail-steel rails, the latter quoting $35 against the billet-rolled price of $36. One broker is understood to be offering a stock of the latter at the $35 figure.

Track fastening demand still is confined to the ordinary run of small orders. Spikes are firm at 2.80c for standard and 3.00c for small.

St. Louis, Feb. 8.—To finance the purchase of 4000 freight cars, 25 locomotives and other rolling stock the St. Louis-San Francisco has asked the interstate commerce commission to approve an issue of $7,800,000 in equipment trust certificates.

ORDERS PLACED

Cudahy Packing Co., Cudahy, Wis., 500 refrigerator cars, to Northern Refrigerator Co.

Pacific Fruit Express, 5041 refrigerator cars divided as follows: 1041 to Pullman Car & Mfg. Corp. and 1000 each to American Car & Foundry Co., Pacific Car & Foundry Co., Standard Steel Car Co. and General-American Tank Car Corp.

Chicago & Eastern Illinois, two diners, to Pullman Car & Mfg. Corp.

Delaware, Lackawanna & Western, two diners, to Pullman Car & Mfg. Corp.

Central Railroad of New Jersey, 25 coaches to Bethlehem Steel Co., 5 passenger and baggage to Pressed Steel Car Co., five baggage and express to American Car & Foundry Co.

Hainesport Mining & Transportation Co., eight hopper cars, to the American Car & Foundry Co.

Florida East Coast, 12 miscellaneous coaches and 15 converted coaches, to the Pullman Car & Mfg. Corp.

Canadian Pacific, 100 ore cars, to the Canadian Car & Foundry Co.

St. Louis-San Francisco, 950 steel underframes and repairs for 600 box cars and 350 gondola cars, to own shops.

Delaware, Lackawanna & Western, two dining cars, to the Pullman Car & Mfg. Corp.

Missouri Pacific, three gasoline rail motor cars, to the J. G. Brill Co.

LOCOMOTIVE ORDERS PLACED

Weirton Steel Co., switch engine, to the American Locomotive Co.

Birmingham & Southeastern, one locomotive, to the American Locomotive Co.

Alton & Southern, one locomotive, to the American Locomotive Co.

Bwana McKubwa Copper Co., Rhodesia, South Africa, one locomotive, to the American Locomotive Co.

Simpson Logging Co., two locomotives, to the Baldwin Locomotive Works.

Flordida East Coast, six switch engines, to American Locomotive Co.

Modesta & Empire Traction Co., one Mogul locomotive, to American Locomotive Co.

ORDERS PENDING

Western Maryland, 1000 box cars; pending.

Premier Equipment Corp. Inc., Houston, Tex., 50 tank cars; bids asked.

Southern Pacific, 28 baggage cars, 10 passenger coaches and 6 baggage and mail cars; pending.

Santa Fe, 27 passenger cars; pending.

Commercial Solvents Corp., Inc., Terre Haute, Ind., 35 tank cars; pending.

Wire

Jobbers Taking Material to Replenish Stocks—Operations Are Steady

WHILE consumers of manufacturers' wire are taking more material, principal demand at present is from jobbers, who are adding to their stocks and filling in where assortments have been depleted. Indications are that February will exceed January in volume of sales. Prices are steady with continued talk of an advance which is contradicted by weakness in wire.

WIRE PRICES, PAGE 410

Chicago, Feb. 9.—Jobbers' stocks of wire products, which have been low, are now being replenished in anticipation of spring demand. Plain wire, nails, staples, netting and light fencing are the principal items being stocked. Demand for manufacturing lines is fair but western mills are unable to increase operations above 65 per cent. Suggestions of a second quarter advance are current again but most consumers are not apprehensive in view of weakness in wire product prices the past few months. However, the levels of 2.55c, Chicago or western mill, for plain wire and 2.70c for wire nails are more prevalent.

Boston, Feb. 9.—Sales of nails during the week have shown a larger total than in several months. Prices are firm at 2.65c Pittsburgh. Plain wire is holding its own with price unchanged at 2.875c Boston.

Pittsburgh, Feb. 9.—Representative wire products makers are in receipt of orders for one to four carloads daily. Strong indicatons are to the effect that February will exceed January, in new business and shipments. Manufacturers' wire business continues fairly active and jobbers continue to order for stock. Operations are on a 60 to 65 per cent basis. Base prices are unchanged, the nail price being firmer if anything at 2.65c, and plain wire unchanged at 2.50c.

Nonferrous Metals

Higher Prices Develop as Foreign Market Displays Renewed Strength and Buying Is Improved—Copper Exporters Organizing

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 3	14.12½	14.25	13.55	62.37½	9.25	9.12½	8.10	27.00	22.00	35.00
Feb. 4	14.25	14.37½	13.75	63.00	9.25	9.12½	8.10	27.00	22.00	35.00
Feb. 5	14.37½	14.45	13.77½	63.25	9.25	9.12½	8.10	27.00	21.75	35.00
Feb. 8	14.25	14.37½	13.62½	63.50	9.25	9.12½	8.10	27.00	21.87½	35.00
Feb. 9	14.25	14.37½	13.62½	63.25	9.25	9.12½	8.10	27.00	21.87½	35.00

NEW YORK, Feb. 9.—Buying of nonferrous metals improved last week with the stimulus of higher prices. The rise in values was due more to strength abroad than to increased buying by domestic users, but the support of the latter in turn aided the trend. Declining prices through January with shipments permitting only a little accumulation of stocks, afforded a good setting for the strong reaction. A development of great importance is the plan of copper producers to organize a new export association.

Rolled products—Rolled brass and copper were marked up ¼ cent a pound Feb. 4 as copper reached 14.25c delivered, counteracting the cut of a similar amount on brass products not quite a week earlier. In the last change all copper products except wire were involved whereas a week earlier none of the copper products except tubing was cut. This action is explained in the fact that the cut was due to the fall in zinc of nearly 1 cent in the past month, with no net change in copper, whereas the last change was due to the rise in copper. Buying of products lately has been moderate but mills have continued large shipments on contracts.

Zinc—The coating metal has held steady at 8.10c East St. Louis for about a week on prompt shipment, after selling at 8.00c for all positions the latter part of January. February also sold as high as 8.10c but not so regularly. In the past few days it has been about 8.07½c and March 8.05c. Perhaps some forward shipment might be had a little under the latter figure but the tendency has been to narrow the spread again between prompt and future. Galvanizers have been interested the past week mostly in shipment the latter part of this month. Output continues unusually high. The ore market is steady after slipping a few dollars.

Tin—The price of this metal has gone up nearly 3 cents in a little more than a week on spot, and almost as much on futures. However, the amount of metal on hand here again is low, and as the market has become stronger the spread between positions has increased. February delivery is about ¼ cent under spot and each month down about a similar amount.

Copper—Buying was of good size for several days on the way up to 14.25c Connecticut. Above that figure not a great deal was sold. A shortage among some foreign speculators was a big factor in strength. However, there was an increase also in regular export trade and rising prices brought in some domestic business. Copper producers are forming a new export association.

Lead—This metal has changed little but futures are easy in New York, while the East St. Louis market holds relatively strong.

Aluminum—Shipments of ingot aluminum are going ahead at a high rate but users generally are covered on contracts so that not much new buying is being done. Scrap and secondary products have been easy of late.

Scrap—Old metals have been a little more active lately, and under the influence of higher copper prices, dealers have marked up prices of brass and copper scrap.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.12½
Copper, hot rolled	22.75
Zinc, ga. 9 to 17	12.00
Lead full sheets (cut ¼c more)	13.00 to 13.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.75
Copper	24.50
RODS	
High brass (round ⅝ to 2½-inch)	16.87½
Naval brass	19.62½
WIRE	
Copper	16.12½ to 16.25
High brass	19.62½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.00
Chicago	9.75
Cleveland	9.25 to 9.50
HEAVY YELLOW BRASS	
New York	7.00 to 7.25
Chicago	8.25
Cleveland	7.00 to 7.25
ZINC	
New York	5.25
Cleveland	4.75 to 5.00
HEAVY COPPER AND WIRE	
New York	12.00
Chicago	11.75
Cleveland	11.75 to 12.00
RED BRASS BORINGS	
New York	8.25
YELLOW BRASS TUBING	
Cleveland	7.25 to 7.50
LIGHT COPPER	
New York	9.50
Chicago	10.00
Cleveland	10.00 to 10.25
LIGHT BRASS	
Chicago	7.50
Cleveland	6.25 to 6.50
ALUMINUM	
Borings, Cleveland	14.00 to 15.00
Cast	18.00 to 19.00
Clippings	21.00 to 22.00

Secondary Metals

Remelt aluminum No. 12	24.00 to 25.00
Brass ingot	12.25

Coke By-Products

Demand Is Well Sustained, Prices Steady—Naphthalene Sales Large

New York, Feb. 9.—Coal tar products are steady, with demand maintained at an unusually good rate for this season of the year. This applies particularly to 90 per cent benzol, toluol and solvent naphtha.

The 90 per cent benzol is quoted at 24 cents works in tanks and 29 cents in drums; pure benzol at 23 cents works in tanks and 28 cents in drums; toluol and solvent naphtha at 35 cents works and 40 cents in drums, and commercial xylol at 36 cents in tanks and 41 cents in drums. By error, the latter was quoted at 26 cents and 21 cents, respectively, in the Feb. 4 issue of IRON TRADE REVIEW.

Despite brisk demand for naphthalene for spring delivery, the market holds unchanged at 7 cents works for flakes and 8 cents for balls. Phenol is quoted at 22 cents works. Sulphate of ammonia is unchanged at $2.70 to $2.75, port, in double bags for export shipment and $2.70 to $2.75, delivered, for domestic.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.23	.....
90 per cent benzol	0.24	.....
Toluol	0.35	.....
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.07	
Naphthalene balls	0.08	
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.72½	.....

A. M. Byers Makes Report

In the first quarterly statement of earnings ever published since the founding of the company in 1864 the A. M. Byers Co., Pittsburgh, reports net earnings after all charges and preferred dividends of $285,654 for the quarter ended Dec. 31, equal to $1.38 a share on common stock.

Coast Buys Small Lots

Most Trading Is Unimportant but Large Projects Are Appearing —Prices Are Firm and Shading Disappears

SAN FRANCISCO, Feb. 6.—Trading in iron and steel products on the Pacific Coast during the past week was confined almost entirely to small lots, few large projects being awarded. While construction work planned and contemplated calls for a heavy tonnage of plates, shapes and bars, it is not being released for figures as rapidly as was expected at the beginning of the year.

Pig Iron and Coke

Sales and inquiries for pig iron and coke have been confined to the usual run of small, spot lots for immediate shipment. No large awards were reported. Prices remain unchanged.

Bars, Plates and Shapes

Concrete bar awards this week aggregated over 700 tons and included 300 tons for a hotel in San Diego and 300 tons for the Vista avenue bridge at Portland, placed with unnamed interests. Pending business is of fair proportions but small projects calling for 20 to 60 tons continue to make most of the sales. Little improvement is noted in demand for merchant material. Prices are firm at 2.35c c.i.f. and Coast mills are meeting this figure.

Plate prices appear firm now at 2.30c c.i.f. and rumors of 2.25c have now disappeared. Awards during the week were confined entirely to lots of less than 100 tons. Several large lots are up for figures, including 2000 tons for a pipe line at Portland and 3000 tons for a penstock for the Feather River Power Co. at San Francisco. Pending business exceeds 6000 tons.

Structural shape awards for the week totaled 316 tons. The United States Steel Products Co. secured 200 tons for a bulkhead for the California Bridge & Tunnel Co. at Oakland and Schraders Iron Works awarded 116 tons for a theater on Haight street, San Francisco. Numerous small lots of 30 to 60 tons were reported placed. Pending business calls for a total of over 13,600 tons. Prices are firm at 2.35c c.i.f. as a minimum with some business bringing 2.40c. Fabricators in the Los Angeles district do not appear interested in the prices being quoted on foreign material, which average about $7 a ton under the domestic price, but several concerns in the San Francisco district have placed fair sized orders.

Other Finished Material

Demand for cast iron pipe remains quiet, few projects being up for figures at the moment. Awards this week totaled 675 tons. B. Nicoll & Co. booked 500 tons for Aberdeen, Calif., and the United States Cast Iron Pipe & Foundry Co. was awarded 175 tons for San Bernardino. Pending business calls for about 1500 tons. Prices continue around $50 base delivered.

Demand for tubular goods is increasing and several fair sized lots were reported placed this week. Crane Co. took 470 tons of 8-inch joint pipe and 750 tons of 8-inch lap weld pipe for Los Angeles. The Coast Counties Gas Co. placed 500 tons of standard pipe with Grinnell Co. of the Pacific.

Movement of sheets is confined to relatively small tonnages as most consumers have covered first quarter requirements. The two local mills report satisfactory business and the Pacific Sheet Steel Co. is preparing to increase its production by installing another two stands, bringing the total to six stands. Prices are firm at 2.60c, 3.35c and 4.60c base Pittsburgh, or equivalent, on blue annealed, black and galvanied sheets respectively.

Jobbers report January sales above those for the preceding month. All lines are fairly active and stocks are well rounded. With the exception of cold rolled shafting in the San Francisco district, which was advanced $10 a ton, from 3.75c to 4.25c, prices remain unchanged.

Coast Pig Iron Prices

Columbia basic	$27.00 to 28.00
Columbia, No. 2 Fdry., San Francisco and Los Angeles	27.00 to 28.00
Anzan No. 1 (Chinese) 2.50 to 3.50 sil. Del. S. F.	25.50
Anzan No. 1 (Chinese) 2.50 to 3.50 sil. Del. L. A.	26.00
Anzan Sil. 4.00, ex-dock Seattle	23.50
Anzan Sil. 4.00, f.o.b. Portland	22.75
*Dutch	24.00
*Indian iron	24.25
*Belgian	24.00
German	24.00
*English (2.75 to 3.75 sil.)	25.00 to 26.00

*C.I.F. duty paid.

Pig Iron Prices Easier

(*Concluded from Page* 411)

ports are that Tennessee iron can be bought at $21.50, Birmingham. for second quarter, but no sales have been recorded at that figure. Alabama iron is firm at $22 to $23, furnace.

Chicago, Feb. 9.—The northern pig iron market displays more life, largely because of the coke situation. Melters are commencing to see that the blowing out of some Ohio stacks may lead to the penetration of Chicago iron farther into Michigan and Indiana. More serious attention to second quarter needs has become apparent. This week it is expected three lots, each ranging from 1000 to 2000 tons, will be placed for the next quarter. One seller believes the opening of a heavy second quarter buying movement is not over two weeks distant. Current inquiry is much in excess of that of a week ago. The melt in automobile territory seems to be increasing slightly. The market on No. 2 foundry and malleable iron is firm at $23, Chicago furnace. Federal B stack has been blown out for partial relining, but is expected to be back by March 10. Sales of silvery iron aggregate 300 tons. Charcoal sales are fair, while low phosphorus is inactive.

St. Louis, Feb. 8.—While sales of pig iron are small, more interest is evident, as inquiries for second quarter are beginning to appear. Several furnace companies are quoting on limited tonnages for that period. The largest single sale reported during the week was 600 tons to a stovemaker in the district for delivery through the second quarter, the business going to the St. Louis Coke & Iron Corp. This interest reported other sales totaling about 350 tons. Sales by other interests aggregated about 1200 tons. Inquiry included 500 tons for an Illinois implement maker, 450 tons of southern iron for a stovemaker, 250 tons for a specialty manufacturer and 150 tons of high silicon iron for a machine builder, all for second quarter. The leading producer in this district is behind on shipments, and is out of the market for first quarter. Prices are steady.

Birmingham, Ala., Feb. 8.—Sales of pig iron for second quarter are equal to about one-half a month's output. Inquiries in hand indicate output for another half month will be covered soon. One of the steel companies probably will remain out of the foundry market in the future, leaving the situation to three other producers. Quotations continue $22 to $23 for No. 2 foundry.

New York, Feb. 9.—Inquiries for second quarter pig iron are beginning to appear. The Standard Gas Equipment Co. is inquiring for 1500 tons of foundry iron for March and June, while the A. P. Smith Mfg. Co. wants 500 tons for second quarter. The Worthington Pump & Machinery Corp. has covered its requirements for Buffalo and Elmwood, O. plants and still wants 1300 tons for Harrison, Pa., and Holyoke, Mass. plants. Several other inquiries aggregate 4000 tons. Sales in this district in the past week totaled 4000 to 5000 tons. Buffalo foundry iron is $21 to $22, base furnace with some recent sales at lower prices. Eastern Pennsylvania foundry iron is $22.50 to $23, base, although some iron was sold recently below $22. Foreign iron is selling at $20.50, duty paid, tidewater, and upwards, depending on circumstances.

Commercial transportation with lighter-than-air craft will be the subject of a talk by Captain Anton Heinen, formerly with the Zeppelin Co. and first commander of the airship SHENANDOAH, before a joint meeting of the New Britain, Hartford and Meriden sections of the American Society of Mechanical Engineers, Feb. 18 at New Britain, Conn.

British Pig Iron Prices Firmer

Furnaces Refuse To Book Orders Beyond April 1 Due to Uncertainty of Coal Supply —January Shipments to United States 7500 Tons—Chile Inquires for 10,000 Tons of Rails; India, for 3000 Tons of Bridge Material

2-3 Caxton House, Westminster, S. W.1
European Headquarters,
IRON TRADE REVIEW,

LONDON, Feb. 9.—(*By Cable*)—More firmness is apparent in the British pig iron market. Substantial sales are being made by the furnaces in the Barrow district, which are booked up to April. The only reason for not lighting more furnaces is the uncertainty regarding coal supplies, and furnace interests are not committing themselves on orders beyond the coal subsidy period. Shipments of pig iron in January to the United States amounted to 7500 tons. Melters on the Continent also have been buying considerable British iron.

The Clyde Shipbuilding & Engineering Co. has received an order for 14 vessels. Chilean railroads are inquiring here for 10,000 tons of rails. India is inquiring for 3000 tons of bridge material. The market for tin plate is firmer, while galvanized is easier. German mills are offering cold-rolled steel £4 ($19.44) below the British price. Continental prices are firm, notwithstanding competition from Germany on sheets and plates.

A report from Berlin states negotiations for an international rail syndicate are progressing.

British Face Scarcity of Iron as Fuel Lacks

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Feb. 1.—(*European Staff Service*)—Pronounced stringency has developed in the Middlesbrough pig iron market. It appears that the spirit of caution, which has prevailed for several months, has been carried a little too far, and users are in difficulties for immediate supplies. Stocks have disappeared, and a number of furnaces are so well booked they are declining further business. The last increase made three days ago, making No. 3—£3 10s ($17.01) is the third within three weeks. The natural remedy would appear to be the starting of more furnaces, of which a number are in readiness. But fuel has become scarce, and the coal outlook causes anxiety. Furnace owners are indisposed to relight furnaces which may possibly have to suspend operations in May. Pig iron deliveries are in arrears and in some cases ships are obliged to leave ports with shor supplies.

Sterling $4.86

The coal menace also affects buying. Large users of pig iron at Birmingham would have contracted for supplies practically over the half year, but desire to see the fuel situation somewhat clearer before speculative buying. Makers also are reluctant to commit themselves, until they are reasonably satisfied that coke at something like stable prices will be forthcoming.

Barrow is sharing in the improvement and has found itself able to advance prices by about 2s ($0.48). There also the makers are content to continue with thirteen furnaces.

The Barrow steelworks have three months work on hand and will take good supplies of pig iron. The price has been increased to £4 17s 6d ($23.69) delivered Birmingham, and the price at furnaces is £4 4s ($20.41).

The bar trade is rather weak, large-

(*Concluded on Page* 429)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 8	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		Francs		Francs		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.01	3 10 0*	$15.21	410	$15.44	340	$17.01	3 10 0
Basic	16.28	3 7 0	15.21	410	15.44	340	15.07	3 2 0
Basic-bessemer	18.71	3 17 0†	14.65	395	14.53	320	17.01	3 10 0
Hematite, Phosphorus 0.02-0.05	20.41	4 4 0	19.48	525	.....	...	18.23	3 15 0
SEMIFINISHED STEEL								
Billets	$26.73	5 10 0	$21.52	580	$21.79	480	$24.30	5 0 0
Wire rods	43.74	9 0 0	28.57	770	28.83	635	27.95	5 15 0
FINISHED STEEL								
Standard rails	$35.24	7 5 0	$25.60	690	$27.24	600	$31.59	6 10 0
Merchant bars	1.49c	6 17 6	1.17c	690	1.17c	570	1.18c	5 7 0
Structural shapes	1.33c	6 2 6	1.07c	630	1.07c	520	1.08c	4 18 0
Plates, ship, bridge and tank	1.55c	7 2 6	1.22c	715	1.21c	590	1.32c	6 0 0
Sheets, black, 24 gage	2.22c	10 5 0	2.28c	1,340	2.30c	1,120	2.59c	11 15 0
Sheets, galvanized, 24 gage, corrugated	3.55c	16 7 6	3.40c	2,000	4.51c	2,200	3.74c	17 0 0
Bands and strips	2.22c	10 5 0	1.46c	860	2.05c	730	1.54c	7 0 0
Plain wire, base	2.39c	11 0 0	1.97c	1,160	1.64c	800	1.71c	7 15 0
Galvanized wire, base	3.04c	14 0 0	2.65c	1,560	2.26c	1,100	2.04c	9 5 0
Wire nails, base	3.15c	14 10 0	2.21c	1,300	1.74c	850	1.93c	8 15 0
Tin plate, base box 108 pounds	$ 4.74	0 19 6	.....	...	.....	...	$ 6.56	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$17.01	3 10 0	$14.65	395(2)	$14.98	330	$19.55	85
Basic pig iron	16.28	3 7 0	14.47	390(1)	14.53	320	20.24	88
Furnace coke	3.89	0 16 0	5.31	143	5.68	125	5.06	22
Billets	26.73	5 10 0	20.78	560	21.57	475	27.37	119
Standard rails	1.57c	7 5 0	1.04c	610	1.18c	575	1.48c	142
Merchant bars	1.52c	7 0 0	1.12c	660	1.21c	590	1.34c	128
Shapes	1.41c	6 10 0	1.07c	630	1.16c	565	1.37c	131
Plates, ship, bridge and tank	1.57c	7 5 0	1.32c	775	1.31c	640	1.48c	142
Sheets, black, 24 gage	2.33c	10 15 0	2.30c	1,350	2.20c	1,075	2.14c	205
Sheets, galvanized 24 gage, corrugated	3.58c	16 10 0	3.32c	1,950	4.56c	2,225	3.96c	380
Plain wire	2.39c	11 0 0	1.74c	1,025	1.74c	850	1.85c	177
Bands and Strips	2.28c	10 10 0	1.24c	730	1.54c	750	1.59c	152

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 6d ($3.77) f. o. b. Ferromanganese £15 5s 0d ($74.12) f. o. b. German ferromanganese £14 0s 0d ($68.04) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

February Sales Start Off in Good Volume—Inquiries Good—Used Tools in Demand With Prices Somewhat Higher

A FINAL checkup of the machine tool and equipment business done in January shows the total to be better than had been expected, but with the level still considerably below that of December. Thus far in February, sales have shown considerable improvement and inquiries forecast continued activity. No large sales are noted, nor is any one industry predominating in the buying. Numerous small lots of equipment are under inquiry by several railroads, including Delaware & Hudson, Central of Georgia, Florida East Coast, Lehigh Valley and Santa Fe. Westinghouse Electric & Mfg. Co. still is deferring purchase against its recent list. Automobile interests still are proceeding with caution, buying equipment for immediate needs.

New York, Feb. 9.—Buying is fairly active and includes some sizable orders. H. K. Porter Co., Everett, Mass., has closed on eight automatic milling machines to Pratt & Whitney Mfg. Co. Two orders involving around $35,000 each comprise a 68-inch rod miller for the Baltimore & Ohio and a rim rolling machine for Whitehead & Kales, River Rouge, Mich., both going to Niles-Bement-Pond Co. Delaware & Hudson is expected to close shortly on three radial drills and some pipe threading machines. Other pending railroad lists include Central of Georgia, Florida East Coast and Lehigh Valley inquiries. New York Central also has a few machines actively pending and another list under contemplation for Harmon, N. Y. A fair sized list has been issued by the Wood Newspaper Machinery Co., Plainfield, N. J.

Boston, Feb. 9.—Demand for tools from machine tool manufacturers is surprisingly large and is regarded as an encouraging factor. A builder in Rhode Island bought a planer and a drill press and a Worcester, Mass., tool builder bought a milling machine. A manufacturer in Lynn, Mass., bought a large power press, while a Connecticut manufacturer closed on a list of four tools for a new department just opening. Several radio equipment manufacturers have been in the market for individual light tools. Leading dealers at Boston report slight improvement in total sales for the week. Inquiry is fair although transportation difficulties in the East caused by severe weather have slowed up activity during the last two or three days. Prices are unchanged. Machine tool builders in the district are operating from 80 to 90 per cent capacity and orders are reported good. A Connecticut manufacturer has recently closed on a long list of tools for a new plant starting up in Detroit.

Pittsburgh, Feb. 9.—An active market exists in connection with machine tools of the smaller varieties, although orders usually are for one or two items at a time. One exception is the order placed with a local house this past week by a manufacturer of laundry machinery involving six tools, all belt-driven, including two lathes, two grinders, a drill press and a saw. Westinghouse Electric & Mfg. Co. has not started to buy against its list as yet. Union Switch & Signal Co. also is expected to be an important purchaser at an early date as well as such purchasers as Pittsburgh Crucible Steel Co., Columbia Steel Co. (Forged Steel Wheel Co.), Butler, Pa., and one or two others.

Chicago, Feb. 9.—With totals available, January shows up far above the average in machinery sales in this district. One of the largest machinery houses enjoyed the best business for any month in five years. Deliveries are more deferred, especially on shapers and planers. Beardsley & Piper Co., Chicago, has bought two boring mills, a gear hobber, a No. 4 miller, a gear cutter and a grinder, and may buy additional equipment. International Harvester Co. has placed a 5-foot radial drill and along with Dodge Bros., Detroit, has been taking some equipment from the Haynes automobile plant at Kokomo, Ind. An automobile accessory manufacturer has bought 55 arbor presses for its service stations. A. O. Smith Corp., Milwaukee; Nash Motors Co., Kenosha, Wis., and National Lock Co., Rockford, Ill., are placing tools. Morgan Gardner Electric Co., Chicago, has placed most of its recent list. Santa Fe railroad is inquiring for a frog and switch planer with 36-inch table. Dealers handling used equipment find it difficult to purchase at what they call a reasonabe price.

Cleveland, Feb. 9.—After a rather dull month in January, business in machine tools during the first few days of February has shown considerable improvement. While sales are nothing unusual in way of size, the volume is fair. Inquiries indicate good activity for the balance of the month. Manufacturers are operating at a satisfactory rate. A local manufacturer has received an order for five turret lathes. Connors Hoe & Tool Co., Columbus, is in the market for two 24-inch lathes and some special machinery. An inquiry of the Republic Structural Iron Works, Cleveland, lists a gate shear, a medium capacity combination punch and shear, several electric rivet heaters and an angle bending roll. General welding equipment is required by the Reliable Welding Co., Toledo. Used tools are enjoying a good demand, but dealers are finding difficulty in buying in first class machines. Prices are high and many users are buying direct.

CRANE ORDERS PLACED

Two 2-ton underhung cranes for Brewster & Sons, Bogota, N. J., to New Jersey Foundry & Machine Co.

Two ice cranes for Pasadena Ice Co., Pasadena, Calif., to Union Iron Works.

Two 5-ton transfer cranes and one cab-controlled hoist for Emsco Derrick & Equipment Co., Houston, Tex., to Union Iron Works.

Two cranes, one 3-ton and one 1-ton for Gaydica Iron Works, Broklyn, N. Y., to Shepard Electric Crane & Hoist Co.

Two cranes, one 10-ton and one 2-ton, for A. P. Grimm Foundry Co., Raritan, N. J., to Northern Engineering Works.

Among single orders were: 30-ton charging crane for Pittsburgh Steel Co., Pittsburgh, to Morgan Engineering Co.; 5-ton crane for Union Switch & Signal Co., Swissvale, Pa., to Shaw Electric Crane Works; 60-ton crane with 10-ton auxiliary for Phoenix Utility Co., New York, for installation at Sanford, Fla., to Whiting Corp.; 25-ton electric gantry crane for Delaware, Lackawanna & Western railroad for installation at Newark, N. J., to Whiting Corp.; 75-ton crane for Barstow Management, Reading, Pa., to Niles-Crane Corp.; 20-ton used locomotive crane for Weston Iron Co., Washington, to Philip T. King.; 10-ton special crane of suspended transfer type for power plant near Lakeland, Fla., to New Jersey Foundry & Machine Co.; 3-ton hoist for Lacy Mfg. Co., Los Angeles, to Union Iron Works; 3-ton single beam crane for Palo Verde Irrigation district, Calif., to Union Iron Works.

CRANE ORDERS PENDING

Three 15-ton cranes for Pittsburgh Crucible Steel Co., Pittsburgh; bids being compiled.

Two 3-ton cranes for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for St. Louis; bids being taken.

Two ore bridges, one one-car dumper for Weirton Steel Co., Weirton, W. Va.; bids being compiled.

Veto Price Maintenance

Washington, Feb. 9.—Balloting of the United States chamber of commerce on the question of legislation permitting maintenance of resale prices disclosed that the membership is not in support of the proposals. The vote is intended to clarify the chamber's position, conocerning which some controversy had existed since a referendum was taken on the same general subject in 1916. On four of the five questions submitted, a majority voted in favor of the principle of price maintenance, but under the by-laws of the organization a two-thirds vote is required for commitment.

Sheet Wages

Raise Question for Producers — Leading Interest Makes Advance

Pittsburgh, Feb. 9.—Following the lead of the American Sheet & Tin Plate Co., independent hot mill operators have made a voluntary effort to wipe out inequalities in the pay rates of hot mill crews other than the tonnage men. The wage increases of 5 to 10 per cent have been inaugurated Feb. 1 by the American company and since by the Jones & Laughlin Steel Corp., McKeesport Tin Plate Co. and other large producers.

The wage problem now is confronting sheet manufacturers and undoubtedly will command more attention as the summer approaches. The wages of the tonnage men which make up the sheet mill crew is about 26 per cent above those in effect in 1914, while, it is pointed out, wages now paid in the building and other trades are on a much higher basis. This situation has created some unrest among skilled mill workers. The tonnage men's wages are dependent upon the selling prices of sheets while the day men are paid on an hourly basis. Whether the wages of the day men can be increased without making some adjustment in the rate of the tonnage men is an open question agitating producers' minds.

The situation is being widely discussed throughout the Mahoning valley, where an organization movement is now under way. A meeting was held in Girard, O., last Sunday, while next Sunday all members of this joint committee and representatives of all district lodges will meet at Warren, O. Other meetings are to be held.

Will Extend Coke Oven Plant at Clairton

Pittsburgh, Feb. 9.—Directors of the United States Steel Corp. have authorized an appropriation of $4,000,000 of the Carnegie Steel Co. for the construction of 300 additional by-product coke ovens with by-product recovery departments, shops and shop equipment at the Clairton Coke Works, Clairton, Pa. Completion of the new batteries will give the Clairton division of the Carnegie company a complement of 1434 by-product ovens. This appropriation is part of the $25,000,000 which the directors recently set aside for additions and improvements to corporation holdings in the Pittsburgh district.

The program of modernization, in addition to the coke ovens, includes gas lines for conveying gas from the coke plant to steelworks in the district; the purchase of three towing steamers and 70 barges for use on the Monongahela river in transporting coal from mines to the extension of the Clairton coke plant; the installation of three turbo-blowers to serve two blast furnaces at the Edgar Thomson works, replacing obsolete equipment; and the rebuilding and modernizing of blast furnaces Nos. 6 and 7 at the Carrie plant of the Carnegie Steel Co., Homestead, Pa.

American Plan Officers Elected at Cleveland

G. E. Randles, president, Foote-Burt Co., was elected president of the American Plan association, Cleveland, by the board of governors Feb. 5. P. E. Bliss, vice president and treasurer, Warner & Swasey Co., was elected vice president of the association, and F. G. Hodell, president, Chain Products Co., treasurer. William Frew Long, re-appointed secretary and general manager. In addition to the officers the new board of governors consists of:

George S. Case, treasurer Lamson & Sessions Co.; Jacob D. Cox, Jr., president, Cleveland Twist Drill Co.; W. H. Cowdery, president, American Fork & Hoe Co.; George A. Graham, vice president, Chandler Motor Car Co.; W. B. Greene, president, Acme Palmers & De Mooy Foundry Co.; R. W. Kaltenbach, president, McMyler-Interstate Co.; E. H. Parkhurst, vice president, Columbia Axle Co.; R. G. A. Phillips, vice president, American Multigraph Co.; Myron A. Wick, vice president, Elyria Iron & Steel Co.; L. R. Scafe, general manager, Fisher Body Ohio Co.; R. H. West, president, West Steel Castings Co, and S. D. Wright, manager Atlas Car & Mfg. Co.

Metal Trades Association Adds 12 Members

Twelve additional companies have been accepted as members of the National Metal Trades association, their names and addresses as follows:

Aetna Foundry & Machine Co., Warren, O.; Altorfer Bros. Co., Peoria, Ill.; Blackmer Pump Co., Grand Rapids, Mich.; Clark Bros. Co., Olean, N. Y.; William Ganschow Co., Peoria, Ill.; Grimm Stamp & Badge Co., St. Louis; Hart Grain Weigher Co., Herschel Mfg. Co. and A. Lucas & Sons, all of Peoria; Moline Foundry & Machine Co., Moline, Ill.; More-Jones Brass & Metal Co., St. Louis; J. T. Wright Co., Cincinnati.

The association has issued a booklet "History, Scope and Purpose", descriptive of its activities, for general distribution among those in sympathy with the open shop principle of employment, and obtainable by addressing the association, Peoples Gas building, Chicago.

To Operate Plants

The reorganization committee of the Hydraulic Steel Co., Cleveland, is preparing to bid in the assets of the company at a sale plan for March 2. The committee then proposes to complete negotiations for the sale of Cleveland Welding Mfg. Co., the West Side plant of the company, to the present management of the plant which will run it. The committee also plans to operate the other plants of the company, the Hydraulic Pressed Steel and the Hydraulic Steelcraft, until such time as the properties can be sold.

Steel Club Has Dinner

About 250 steel salesmen and guests attended the annual dinner of the Steel club of Philadelphia Feb. 5. Those present included district representatives of practically all the steel companies which maintain sales offices in Philadelphia, with executives and purchasing officers of many of the most important steel consumers in the district. S. J. Cotsworth, district manager of the Lorain Steel Co., president of the Steel club, presided over the dinner. Other officers are: vice president, Frank W. Jones, Eastern Steel Co., and secretary and treasurer, Frank Krause, Bethlehem Steel Co.

Iron Ore

Producers Negotiate for Ford Tonnage—Advance May Be 25 Cents

Cleveland, Feb. 9.—Since the Ford Motor Co. issued its inquiry late last week for Lake Superior iron ore more comment has been heard regarding prices. The consensus of opinion among producers represented here is that the advance will not be as large as they had hoped for. It is believed in some quarters that it certainly will not be over 50 cents, and more likely will be 25 cents. The Ford inquiry calls for 275,000 tons, made up of four grades. The company's inquiries in recent years have been the signal for independent negotiation and sharp competition and observers believe this will tend strongly to hold down the price. This represents the largest open market tonnage figured, and probably will establish the price for the season.

The balance of iron ore on Lake Erie docks Feb. 1 was 6,622,533 tons, compared with 6,723,719 tons Feb. 1, 1925.

Chicago, Feb. 9.—An increase of more than 15 per cent in iron ore tonnage to be handled in 1926 by the Chicago & North Western railroad is predicted by F. W. Sargent, president. Last year the North Western transported 8,500,000 tons of iron ore and the expectation for 1926, according to Mr. Sargent, is 10,000,000 tons.

Rebates Bare German Dumping

Schedule of Discounts on Steel for Export Manufacture, as Fixed by Syndicate, Cited as Reason for Investigation of American Producers' Charges—Commercial Attache Says They Show Extent of Preference

WASHINGTON, Feb. 9.—Attention of the United States customs division has been directed to the export rebates or bounties being authorized through the German Steel syndicate, under which rebates are granted for raw steel in Germany purchased for export manufacture. It is claimed this steel is coming to the United States and it is understood the customs division is conducting an investigation under section 303 of the tariff act, which provides for the assessment by the United States of an extra duty equal to the net amount of bounties or grants authorized in foreign countries.

This section of the tariff law provides that whenever a country, corporation or cartel shall bestow any bounty or grant, directly or indirectly, upon the production or export of any article, upon the importation of such merchandise in the United States, whether changed by manufacture, or in its unfinished state, the additional countervailing duty shall be levied.

This countervailing clause of the tariff act also has been invoked in the case of complaints against pig iron imports into this country from British India, based upon the bounty paid on steel in India, and the customs service at present is conducting this investigation also. It is understood that reports as a result of the latter investigation have indicated that the bounty on Indian steel was authorized because of the fact that steel has been sold in India by producers in England below the Indian market prices.

According to the American commercial attache at Berlin the extent to which dumping is being practiced by the German steel industry is indicated by recent rebate figures. In the case of merchant bars and hoops iron, it is pointed out, the rebate represents 16 per cent of the fixed domestic price, and for billets 13 per cent.

"It is interesting to note, however," his communication states, "that in only two instances the December discount to exporting manufacturers has been increased, while it has been decreased in four instances.

"This indicates that theoretically the spread between domestic and export prices in Germany for unmanufactured iron and steel has not increased during the past month, as the German finishing industries, under their agreement with the Steel syndicate, are entitled to receive the full amount of this spread in respect to their exports of machinery and other 'end products.'

"It is doubtful, however, whether this is the case, for French 'exchange dumping' upon foreign markets has increased during the past few weeks and individual German manufacturers have been tempted to meet it, no doubt by the further export discounts."

The following table shows the rebates for the last three months, together with the domestic price, as fixed, by the cyndicate:

DOMESTIC PRICES, F.O.B. RUHR WORKS

	(Marks per metric ton) Oct.	Nov.	Dec.
Ingots	105.00	105.00	104.25
Blooms	112.50	112.50	111.75
Billets	120.00	120.00	119.25
Merchant bars	130.00	130.00	130.00
Hoop iron	155.00	155.00	154.20
Shapes	126.00	124.00	124.00
Black sheets, 1 to 3 mm.	170.00	170.00	170.00
Black sheets, up to 1 mm.	180.00	180.00	180.00

REBATES TO EXPORT MANUFACTURERS

	(Per cent) Nov.	Dec.	Jan.
Ingots	10	10	10
Blooms	15	15	15
Billets	15	15	15
Merchant bars	22	22	22
Hoop iron	25	25	25
Shapes	22	22	22
Black sheets, 1 to 3 mm.	15	15	12
Black sheets, up to 1 mm.	15	15	10
Black sheets, less than 1 mm.	15	15	15
Gas pipe	40	40	40
Rolled iron	22	22	22
Boiler tubes	40	40	40
Boiler plate	20	20	22
Transformer sheets	30	40	25
Dynamo sheets	25	30	15

Says Steel Needed Is Not Rolled Here

SNEAD & Co., Jersey City, N. J., the contractor for erecting the bookstack building of the Library of Congress, Washington in which a small tonnage of foreign steel is to be used as stated in the Feb. 4 issue of IRON TRADE REVIEW, in a communication to the editor by Angus S. Macdonald who is president, gives some further facts on this matter. Mr. Macdonald says:

"The writer has noted with a great deal of suprise your article on page 363 of the Feb. 4 issue of the IRON TRADE REVIEW *which relates to our contract for building the Northeast Court bookstack of the Library of Congress. The article is correct in some respects but it has some errors and misleading statements.*

"The several hundred tons of metal that we have considered buying from Belgium, France and Germany is only a comparatively small part of the total tonnage in the contract and consists for the most part of certain special shapes and sizes that are not rolled in this country but which are required to secure proper efficiency for meeting the particular conditions of this unusual bookstack. The great bulk of the tonnage will be of domestic origin and production from ore through to finished product. We say that as a matter of information and not of apology because it is obviously impossible for foreign nations to pay their debts to us without our buying some of their products and we see no reason why domestic steel producers should not bear this competition just as other producers must bear it.

"The price of $1.68 *per* 100 *lbs. which you mention is much lower than the average we would have to pay. In fact if it were not for the Pittsburgh basis of charging freights and the greater efficiency of certain foreign shapes any offerings of foreign steel that we have received would be entirely unattractive to us. The question of 'dumping' as emphasized in your article is preposterous on the basis of conditions as we understand them."*

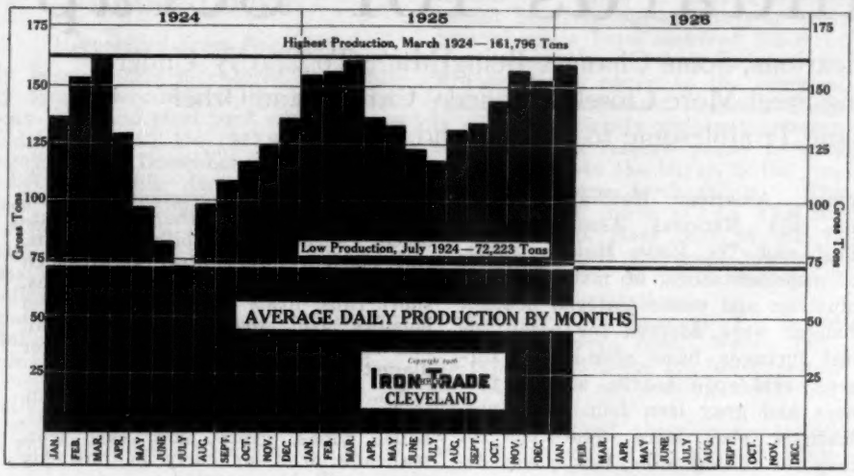
Tariff Commission To Investigate Fluorspar

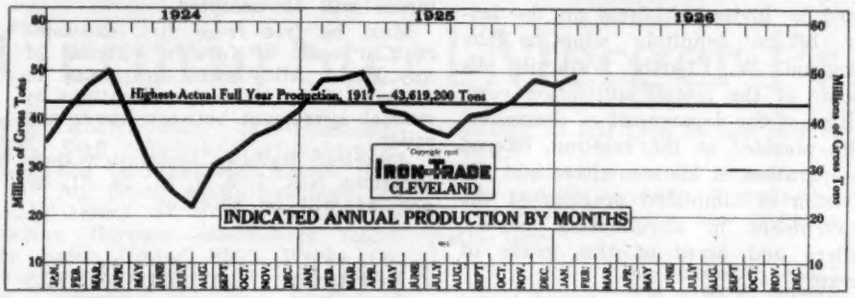
Washington, Feb. 9.—Investigation as to the merits of the appeal from the fluorspar industry for an increase of 50 per cent in the present duty, under the flexible clause of the tariff act, has been decided upon by the United States tariff commission, and the investigation will proceed within a short time.

The increase sought is from the present duty of $5.60 a long ton to $8.40 a ton. According to the United States geological survey, requirements of the country call for about 150,000 tons of fluorspar annually. About half of this now comes from foreign sources. About 60 per cent of the imports of fluorspar have been coming from the British Isles, where it is obtained as a lead product.

Prior to the war, foreign imports only represented about 20 per cent of annual requirements.

Ingot Output Close to Peak





MAKING a fair gain over December, steel ingot production in January reached a rate which was the highest January in history and the third highest rate for any month in history. Operations during the month represented 89 per cent of the country's theoretical capacity as of Dec. 31, 1925. According to statistics compiled by the American Iron and Steel institute, from figures supplied by companies which in 1924 made 94.43 per cent of the country's total, production in January was 4,153,545 gross tons. This was an increase of 177,721 tons, or 4.4 per cent, over the 3,975,824-ton output of December. Both January and December had 26 working days.

Average daily production in January was 159,752 tons per day, which compared with 152,916-ton rate of the preceding month, was an increase of 6836 tons per day, or 4.4 per cent. December production had shown a loss of 2.1 per cent from the November output, but holiday interruptions probably were largely responsible. The January rate stands as the third highest monthly rate on record, being exceeded only by the 161,796 tons per day in March 1924 and 161,482 tons in March 1925. As compared with the country's record output, the January rate represents 98.8 per cent.

With 311 as the number of working days in the year and the production of 159,752 tons per day in January, the indicated annual rate of production was 49,680,000 tons. The indicated annual rate of December was 47,550,000 tons. The country's highest actual production for a full year was in 1917 with 43,619,200 gross tons. The institute has expanded its ingot compilation by including a figure representing the per cent of operation. This figure is based on the theoretical ingot capacity of the country as of Dec. 31, 1925, which according to the recent survey was 56,000,000 tons. Thus the indicated annual rate of 49,680,000 tons in January represents 89 per cent operations.

Steel ingot production figures for 1925 and January 1926, as compiled by the American Iron and Steel institute, are shown in the accompanying table.

Steel Ingot Production—1925-26

94.43 Per Cent of Industry Reporting

Gross Tons

1925	Open hearth	Bessemer	All other	Monthly production companies reporting	Calculated monthly production all companies	No. of working days	Approximate daily production all companies gross tons	Change in daily production per cent
Jan.	3,262,748	689,996	11,960	3,964,704	4,198,564	27	155,502	+13.3
Feb.	2,931,964	602,042	13,014	3,547,020	3,756,243	24	156,510	+ 0.6
Mar.	3,336,169	614,860	13,633	3,964,662	4,198,520	26	161,482	+ 3.1
Apr.	2,857,802	515,715	14,182	3,387,699	3,587,524	26	137,982	—14.5
May	2,754,130	497,708	13,790	3,265,628	3,458,253	26	133,010	— 3.6
June	2,538,988	476,945	12,490	3,028,423	3,207,056	26	123,348	— 7.2
July	2,444,969	457,095	13,547	2,915,611	3,087,590	26	118,753	— 3.7
Aug.	2,696,667	523,734	12,914	3,233,315	3,424,034	26	131,694	+10.9
Sept.	2,737,251	547,121	13,977	3,298,349	3,492,904	26	134,342	+ 2.0
Oct.	3,075,995	584,567	15,624	3,676,186	3,893,028	27	144,186	+ 7.3
Nov.	3,091,361	581,347	17,085	3,689,793	3,907,437	25	156,297	+ 8.4
Dec.	3,169,224	569,304	15,843	3,754,371	3,975,824	26	152,916	— 2.1
Total	34,879,268	6,660,434	168,059	41,725,761	44,186,977	311	142,080	.....
1926								
Jan.	3,326,846	581,683	13,664	3,922,193	4,153,545	26	159,752	+ 4.4

Rebuilds Heating Units

Twelve billet heating furnaces at the plant of the Federal Alloy Steel Corp., Eddystone, Pa., are being rebuilt. About six months ago the corporation started production of merchant and concrete reinforcing bars, operating 16 and 10-inch mills.

Index Is Ready

THE index to Volume LXXVII of IRON TRADE REVIEW, *covering the last six months of* 1925, *now is ready for distribution. Copies will be sent to all subscribers desiring them.*

Sells Its Own Coke

Chicago, Feb. 9.—The Indiana Coke & Gas Co. is now handling all of its sales of coke, both industrial and domestic, through its home office at Terre Haute, Ind., its sales agreement with Rogers Brown & Croker Bros. Inc., having expired Jan. 31. A branch office has been established at 1200 Old Colony building, Chicago, in charge of Lewis D. McClaren. On the sales staff is A. B. Weaver, formerly with the Rogers Brown interests.

Salesmen To Meet

Cleveland Purchasing Agents association, Cleveland, has chosen Thursday, Feb. 18, as the date for its annual salesmen's meeting, at the Hotel Winton. Each member of the association has been asked to extend the invitation to sales managers, salesmen of their own organizations and all salesmen calling on them.

An address of interest to sales executives and purchasing agents will be the feature of the evening.

Adopt Standards for Scrap

All Interests Agree on Specifications, Some Changes Being Made To Clarify Understanding—Heavy Melting Steel More Closely Defined—Chrome and Other Alloys Become Troublesome to Dealers and Users

WASHINGTON, Feb. 9.—Approval was given to revision of a large number of items in the standard classifications of iron and steel scrap, adopted about a year ago at the bureau of standards, at a conference in the department of commerce, Thursday, Feb. 4. The revisions were made in the hope of clarifying the classifications that have been in effect for a year, tested through the experience of buyers, sellers and users of scrap.

The most extensive changes adopted were those for No. 1 heavy melting steel, in which it was attempted to simplify some of the specifications about which some question had arisen. It was voted that the revised specifications become effective July 1, or sooner if individual sellers, buyers and users are ready to do so.

The conference was guided in its task by several hundred mail suggestions that had been submitted to the iron and steel committee of the National Association of Purchasing Agents and others actively interested in the conference. An informal meeting was held in the Raleigh hotel Wednesday evening to consider the suggestions sent in by various firms and individuals.

Some discussion was developed concerning the problem of classifying chrome and other alloy turnings, particularly those coming from automobile plants, which are mixed oftentimes with carbon scrap without the knowledge of the shipper and dealer, who receive it just as it is collected at the plant. Rejections result, which are costly to the scrap seller. H. R. DeGroat of Allwood & Co., Philadelphia, pointed out that this situation may have a serious result on the scrap markets in the future, and that it has become a problem of importance to inform the dealer and shipper of scrap and the foundry and other users that large quantities of chrome and other alloy scrap are being collected with carbon grades, particularly in such centers as Detroit.

Wide Interests Represented

The conference was attended by representatives of the American Foundrymen's association, the American Electric Railway association, the American Society of Mechanical Engineers, the American Engineering council, American Railway association, the National Association of Sheet and Tin Plate Manufacturers, and representatives of metal-working industries and waste material dealers. Changes were adopted for scrap for blast furnaces, basic open-hearth furnaces, acid open hearth, electric furnaces and gray iron foundries, Specifications also were approved for scrap for rolling mills, but it was decided to invite criticisms on the latter before definitely adopting the program. W. Chattin Wetherill, director of the metals utilization committee of the department of commerce, who presided at the meeting, offered co-operation of his committee and the division of simplified practice of the government in circularizing buyers, sellers and users of this grade of scrap.

The conference also adopted tentatively a standard scrap purchase contract form, prepared by the purchasing agents' association and the National Association of Waste Material Dealers. This contract form complies in general with the standard form adopted by the purchasing agents' association through the co-operation of the division of simplified practice last summer.

The work toward obtaining uniform specifications has been under way since 1923, when several sets of specifications were in use. H. C. Wickline, of the Union Steel Casting Co., Pittsburgh, also representing the National Association of Purchasing Agents, presented the complete report for revision.

The new heavy melting specifications are as follows:

Steel scrap ¼-inch and over in thickness, not over 18 inches in width and not over 5 feet long. Individual pieces must be cut into such shape that they will be free from attachments and will lie flat in a charging box. Plate scrap must be cut approximately 15 x 15 inches. Cut boiler plate must be cleaned of lime and free from staybolts and not over 3 feet long. Smaller dimensions of plate scrap may be required on special agreement between buyer and seller. No piece to weigh less than 10 pounds.

May include structural shapes, bars and plates, steel castings, heavy chain, carbon tool steel, heavy forgings, forge butts and similar heavy material..

This grade may also include new mashed pipe ends, original diameter 4 inches and over, thoroughly flattened, sheet bars, billets, blooms, rail ends, railroad steel scrap such as angles, splices, couplers, knuckles, short rails, draw bars, cut cast steel bolsters, coil and leaf springs (all coil springs to be ⅜-inch, or larger diameter.)

No needle or skeleton plate scrap, agricultural shapes, annealing pots, boiler tubes, grate bars, cast iron, malleable iron, or curly or unwieldy pieces will be accepted.

Must be free from dirt, excessive rust or scale or foreign material of any kind. Alloy steel scrap may be excluded from these specifiecations by mutual agreement between buyer and seller.

American Railway association specifications Nos. 7, 8, 9, 21, 24, 31, 36, and 44 will be accepted.

Rheinelbe Union Bonds Are Sold in U. S.

New York, Feb. 9.—Oversubscription of the first public offering in behalf of the newly formed German steel combine has been announced by Dillon, Read & Co., and their associates. The $25,000,000 issue of 20-year 7 per cent bonds was offered at 94 to yield about 7.60 per cent. Each $1000 bond carried a warrant entitling the holder to purchase before Jan. 1, 1931, 10 shares of Deutsche Luxemburg stock at the equivalent of par. The bonds are obligations of the Rheinelbe Union, which consists of three unified companies operating under intercompany agreements and constituting large coal producing and iron manufacturing group in the Ruhr district. These companies are Gelsenkirchener, Deutsch-Luxemburg and Bochumer Verein.

During the fiscal year ended Sept. 30, it is stated these companies employed on the average about 106,000 men. According to the announcement of the bankers the Reinelbe Union is the largest unit in the pending consolidation of important German steel and coal companies in the Ruhr district.

The Rheinelbe Union, together with the Siemens companies, which are among the largest electrical manufacturers in the world, constitute under intercompany agreements, the Siemens - Rheinelbe - Schuckert Union, one of the great industrial combinations of Europe.

British Iron Scarce as Fuel Lacks

(*Concluded from Page* 423)

ly because this is catered for largely by rerollers able to buy cheap foreign steel and steel bars can readily be obtained at £7 15s ($37.66) delivered against the December figure of £8 ($38.88). This department is subject to keen competition.

The rail mills are busier than for some time, nearly all having somewhat heavier tonanges in hand, and miscellaneous railway buying has stimulated Sheffield activity markedly. Rolling stock orders are keeping Birmingham firms busy by bringing out acceptable lines for the makers of railway buffers, sidebars and similar essentials to truck construction.

The continental situation is, on the whole, rather more favorable. The latest intimation from a number of continental works is that deliveries cannot be given before April or May. Several cases have occurred lately of steel users placing their orders with British works, owing to the practical failure of continental supplies. There is still a sufficiently wide gap between the home and foreign prices to give an advantage to the buyer, if the foreign steel were forthcoming. The Belgians offer joists at £5 ($24.30) f.o.b. Antwerp, steel bars at £5 7s 6d ($26.12) and universal plates at £5 15s ($27.93), all prices very much below British quotations.

Steel scrap is firm at £3 7s 6d ($16.40) delivered South Wales. Buyers continue to press for lower prices, but merchants are holding their supplies.

The galvanized sheet trade is depending largely on its autumn bookings for its activity. Orders lately have come in rather moderately, and it is now fairly easy to get prompt supplies, with prices slightly weaker at £16 10s ($80.79). The black sheet trade continues moderately busy. The Llanelly Steel Co. Ltd. is putting down six additional sheet mills close to its existing plant, which will give largely increased productive capacity. The sheet trade continues almost the only satisfactorv line on the Clyde, the makers of galvanized sheets having three or four months work on hand, and sheet rolling is also an important section of the Middlesbrough trade. English sheet bars continue at £6 5s delivered at the mills.

Business continues rather quiet in tin plate. A few additional orders from the Continent and Australia appear to promise some improvement, but prices have slightly weakened to 19s 3d ($4.67) per box.

German Steel Merger Promises Relief

BERLIN, Jan. 28.—(*European Staff Service*)—The feature of the German iron market during recent weeks has been the establishment of a merger of the leading German steelmakers under the name United Steel Works Co. Seven of the largest works have united in a company, the share capital of which will total 700,000,000 marks, but so far limited to 50,000 marks since the formation is not yet final as the question of taxes in respect to this merger has to be settled. American capital intends to grant a loan to this new trust but as this may be delayed the Rhein-Elbe-Union group already has obtained a loan of 25,000,000 marks from Dillon, Read & Co., New York, and other members of the combine may do the same.

It is hoped by the formation of this merger to reduce production costs and to close down works operating at a loss, since most of the works are producing at less than 65 per cent of capacity.

The following table shows the quotas and the capacity of production of the members of the new trust, in metric tons:

	Quota per cent	Raw steel capacity	Coal capacity
Rhein-Elbe-Union	39.5	1,700,000	20,300,000
Thyssen	26.0	1,700,000	6,600,000
Phoenix	26.0	1,700,000	8,300,000
Rheinstahl	8.5	1,000,000	6,400,000

A little more optimism now prevails with respect to the outlook on the domestic market. The raw steel union has continued its rate of production at 65 per cent for February. Recent unpublished monthly statements of the leading producers show some small profits for the first time. Domestic consumers have been buying at a slightly better rate as the general tone of the market has risen. The Phoenix Mining Co. has resumed operations at three pipe works, and the Rheinstahl Co. has resumed work at its rolling mills. An order for 1500 cars for France has been placed with the Zypen-Charlier Co. of Cologne on reparations account. It is hoped that in view of the general decrease of money rates resulting from the reduction of the rediscount rate of the Reichsbank a revival of building activity will follow in the spring; on the other hand, the release of German properties in the United States will bring new capital to the shipping companies, so that a recival of work in the shipyards also is anticipated.

The December output of pig iron totaled 717,011 metric tons, against 760,353 tons in November, while the steel output decreased from 876,154 tons to 763,596 tons. The 1925 production of pig iron was 10,176,699 metric tons, compared with 7,812,231 tons in 1924. The output of steel in 1925 totaled 12,193,454 tons, as against 9,835, 255 tons in 1924.

Belgian Steel Makers Out of Market

BRUSSELS, Jan. 28.—(*European Staff Service*)—Recent floods in Belgium have wrought havoc in certain districts. Factories and mills in the region around Liege were obliged to suspend operations. The recent cold snap has relieved conditions, however, and the more important plants are expected to resume operations within the next few days.

The strike in the Charleroi district, declared seven months ago, has come to an end. Labor has accepted the 5 per cent wage reduction which employers demanded. In return employers have agreed to certain allowances for men with families. Final settlement was effected by addressing the workmen individually after all efforts to reach an agreement through their delegates had failed. Considerable dissatisfaction is being manifested by industrial leaders with the stand taken by M. Wauters, minister of labor and industry. The latter was asked by the governor of Hainaut

Franc—$0.045

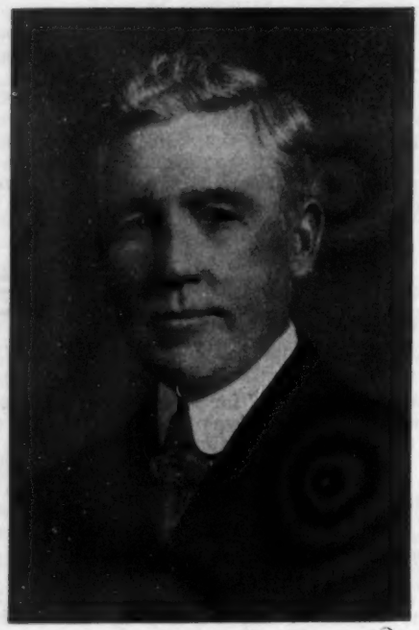
to arbitrate the differences between the workmen and employers. Employers contend that M. Wauters encouraged the men to hold out longer instead of trying to effect a conciliation.

Practically all makers of semifinished steel products have withdrawn from the market. English buyers who deferred their purchases in anticipation of lower prices now find it practically impossible to place their orders. Prices are irregular and premiums are obtained for prompt shipment. Sheet bars have advanced to £4 15s ($23) f.o.b. Antwerp. Published prices of blooms range from £4 1s ($19.60) to £4 3s ($20.20) and billets £4 8s 6d ($21.40), but as no tonnage of these products is available these figures are purely nominal.

Prices of finished steel products are steady. Inquiries for large tonnages of merchant bars for export disclose prices as low as £5 6s ($25.60) f.o.b. Antwerp. Luxemburg and Lorraine mills quote an average of 6d to 1s over Belgian prices. Buying has tapered off, however, in view of the possibility of keener competition within the next few weeks. Lorraine mills are out of the market at present but will undoubtedly be seeking business as soon as they have worked off some tonnage on the French domestic market, which it is believed has been oversold. Moreover, the Charleroi mills are re-entering the market and German and Luxemburg manufacturers will be campaigning for orders soon, as they are reducing their commitments rapidly. Structural shapes are offered at £4 17s 6d ($23.60) f.o.b. Antwerp. Bar size angles bring £5 5s ($25.45) f.o.b. Antwerp. Plates 3/16-inch thick and heavier have been done as low as £5 8s ($26.20) f.o.b.

Industrial Men in the Day's News

George W. Burrell, Retiring Executive of Wellman-Seaver-Morgan Co.



TWENTY-EIGHT years of continuous service with his present company, has earned for him a well deserved rest.

HIS INDUSTRIAL career, starting at the age of 14 has witnessed many important engineering developments, including the successful design of the Grey universal structural mill.

BORN on a farm, his hobby still is outdoor activity which finds expression in gardening and caretaking at his summer home on Lake Erie.

WORK and more work is the simple formula for success advanced by George W. Burrell, who will tender his resignation as vice president and assistant general manager of the Wellman-Seaver-Morgan Co., Cleveland, at the board of directors' meeting some time in February, as announced in IRON TRADE REVIEW, Jan. 28. Mr. Burrell's climb from a machinist's apprentice to executive affiliation with one of the largest companies of its kind in the world, has been won against obstacles that would have dismayed many less persistent or courageous.

Twenty-eight years of continuous service with the Wellman company has earned for him a well deserved rest. A record for faithfulness was made by him, equaled and surpassed by few. Until three months ago, Mr. Burrell had not missed being present at his office because of illness any business day for 11 years.

Many interesting and important projects were developed during his industrial career, but probably the most picturesque is his affiliation with Henry Grey, the originator and patentee of the Grey structural shape mill. Mr. Burrell commented on its introduction as follows:

"Mr. Grey, who formerly was general superintendent of the Cleveland Rolling Mill Co., Newburg, O., now the Newburg plant of the American Steel & Wire Co., went up to Duluth, where for some time the Ironton Structural Steel Co., backed by New York financial interests, had been attempting to roll a wide flange I-beam, or what now commonly is termed the Bethlehem-type I-beam. Considerable money had been spent by the New York interests in their attempt, which consistently had met with failure.

"At the time Mr. Grey left, I was in charge of the testing department of the Cleveland Rolling Mill Co. I went along with Mr. Grey as master mechanic and engineer. We went to the Ironton works in 1896.

"To make a long story short, we found that the Ironton people had been attempting to roll the beams directly from an ingot. It was impossible to reheat the ingot thoroughly and evenly before rolling and consequently the works had been unable to turn out beams with flanges of equal width. After considerable experimenting, we devised the method of putting the ingot through a blooming mill, breaking it down to about 2¼ inches thick at the web. This was then reheated and put through a finishing mill, producing the I-beam with equal width flanges. Of course, further refinements and improvements were necessary, but that is the fundamental change made.

"This took place by the end of 1897. The New York interests, as soon as they found the method was successful, closed the Ironton mill. Mr. Grey went on to New York and I came back to Cleveland and joined the Wellman company. Mr. Grey found that a German company was interested in the new method of rolling shapes and he was retained by them to construct a mill in Luxemburg. Mr. Grey went to Luxemburg and constructed and installed the new mill.

"The new mill was an immediate success in Germany and the United States Steel Corp. started an investigation of the process. Charles M. Schwab, as soon as he heard of the new mill, got in touch with Grey. Schwab and Grey went to Germany and before they returned Grey had agreed to come back to New York and design a mill for the Bethlehem company and then relinquish his interests. Grey solicited my assistance for building the Bethlehem mill, but I was further tied up with the Wellman company then and didn't go. After the new mill was constructed it was changed to the Bethlehem-type mill, the name Grey being dropped. Mr. Grey owned the patents on the mill, disposed of them to the Bethlehem Steel Co., and died shortly after the mill was put in operation.

"Developments moved fast on the new mill. Some of

the men are still with the Bethlehem Steel Co. who were associated with Grey at Newburg and who followed him to Bethlehem some 25 years ago. Many of the patents then owned by Grey probably have expired."

Mr. Burrell was born on a farm in Delaware county, New York. He came to Cleveland at the age of 7. Being the youngest of 10 children and in a family of moderate circumstances, he left school before he had finished his elementary education, going into a machine shop of the Cleveland Rolling Mill Co. at the age of 14. He began the machinist's trade when 15 years old and worked at that for four years, studying at night school.

Considerable of his inspiration and encouragement in this period he credits to Henry A. Barron, then master mechanic at the Newburg works and now general superintendent of the American Steel & Wire Co. Mr. Barron gave Mr. Burrell his first lesson in algebra. He also suggested that Mr. Burrell go to college and selected a three-year course for him at Ohio State university, Columbus, O., from which Mr. Barron had graduated in 1885 in mechanical engineering.

During his vacations while at the university, Mr. Burrell worked at the machinist trade in Newburg. He returned to the Newburg works after his three years at Ohio State, entering the drawing room at $2 a day. He was under the direction of Mr. Barron when he went with Mr. Grey to Duluth. In 1898 he became a draftsman for the Wellman-Seaver-Morgan Co., in 1900 he was made inspector, and in the same year chief inspector. In the next year he was made assistant purchasing agent and in 1902 was promoted to assistant secretary. While in this capacity he was assistant to T. R. Morgan, a partner of the company, who with Mr. Wellman was killed in a train wreck at Mentor, O., in 1905. Mr. Burrell was made assistant works manager in 1902, holding this office until 1917 when he was made works manager. In 1920 he was advanced to the second vice presidency in charge of operations and in 1922 was elected vice president and assistant general manager, from which position he is retiring.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

EDWARD A. DEEDS has been elected chairman of the board of the Niles-Bement-Pond Co., 111 Broadway, New York, machine tool builder, succeeding R. K. LeBlond. Mr. Deeds was made chairman of the executive committee in February, 1925. J. E. Forrestal, of Dillon, Read & Co., New York, was elected a director. Other officials and directors were re-elected.

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J. C. Williams, vice president and general manager of Weirton Steel Co., Weirton, W. Va., has been elected a director of that company.

* * *

Harry L. Brindle, formerly master mechanic of Farrell steel works and furnaces of the Carnegie Steel Co., Farrell, Pa., has been appointed assistant general superintendent of those works, effective about Feb. 1.

* * *

W. P. Davis, for the past ten years general manager of the Knoxville Iron Co., Knoxville, Tenn., has resigned and is succeeded by H. W. Van Benschoten, formerly assistant general manager.

* * *

T. Holland Nelson has become associated with Ludlum Steel Co., Watervliet, N. Y., in a consulting capacity. Mr. Nelson is also vice president of Wm. T. Bate & Sons Co., Conshohocken, Pa., machinist and founder.

* * *

J. Lee Moses has succeeded B. F. Lawrence as purchasing agent for the Oklahoma Steel Castings Co., Tulsa, Okla. Mr. Lawrence resigned a few months ago to devote his attention to the Tulsa Brass Castings Co., of which he is president.

* * *

Seth A. Moulton, managing engineer of Warren D. Spengler, Inc., Cleveland, will discuss high temperature heating at a meeting of electrical maintenance engineers in that city, Feb. 8. Mr. Moulton is nationally known as an engineer.

* * *

Joseph Gross, Pittsburgh, consulting structural engineer, also is Pittsburgh district manager for the American Steel Engineering Co., Philadelphia, concrete bar fabricator, succeeding W. C. Funk, resigned. Mr. Gross formerly was chief designer at Pittsburgh for the Truscon Steel Co., Youngstown, O.

* * *

A. W. Allen, formerly vice president and general manager of Holmes Electric Protective Co., New York, manufacturer of burglar alarms, has been elected president. Mr. Allen for many years was connected with the New York Telephone Co., becoming vice president of the Holmes interest in 1924.

H. F. Stevens, formerly president, has been appointed chairman of the board of directors.

* * *

W. T. Brownscombe has resigned as assistant to Louis Pyle, general superintendent of tin plate mills for Jones & Laughlin Steel Corp. Woodlawn, Pa., where he has been for about seven years, A. R. Wiebel succeeding him. Mr. Brownscombe has been appointed general tin plate mill superintendent for the McKeesport Tin Plate Co., McKeesport, Pa., to succeed I. W. Stuler, resigned after some six years affiliation.

* * *

Everett Michaels, secretary of the Hyman-Michaels Co., Chicago, dealer in surplus and waste materials, is returning from a trip to Europe.

* * *

Howard W. Edwards, treasurer of Edwards Mfg. Co., Cincinnati, has been elected a director of the Cincinnati chamber of commerce.

* * *

A, G. Smith has been made superintendent of the steelworks department of Forged Steel Wheel Co., Butler, Pa., subsidiary of the Columbia Steel Co., Elyria, O. Mr. Smith formerly had been superintendent of the open-hearth department of Trumbull Steel Co., Warren, O., since those furnaces were built. Prior to that time he was identified with several steel interests, including the Sharon Steel Hoop Co., Sharon, Pa., Allegheny Steel Co., Brackenridge, Pa., and the Homestead works of Carnegie Steel Co.

* * *

W. C. Funk, formerly in charge of the Pittsburgh territory for the American Steel Engineering Co., Philadelphia, has resigned to become identi-

fied with the engineering department of Conley & de May, Pittsburgh. Prior to becoming identified with the American Steel Engineering Co., Mr. Funk was connected for 3½ years with the Pittsburgh office of Concrete Steel Co., New York and Youngstown, O.

* * *

E. O. Hood, A. Hood & Sons Hardware & Implement Co., Pittsburg, Kans., has been elected vice president of the company.

* * *

Harry J. Walker has been appointed manager of the newly created western division of Andrews Steel Co., Newport, Ky., at Tulsa, Okla.

* * *

Arthur Johnson has been promoted from secretary and general manager to secretary and treasurer and general manager of Belding Foundry Co., Belding, Mich.

* * *

Charles T. Treadwell, an official of the New Departure Co., Bristol, Conn., manufacturer of bearings, has been elected director of Russell Mfg. Co., Middletown, Conn.

* * *

W. Kesley Schoepf, president of Ohio Traction Co., and Casper H. Rowe, vice president of Fifth-Third National bank, were elected directors of the Dalton Adding Machine Co.

* * *

Frank E. Bolway has been appointed sales manager of the distributor and dealer division, Federal Motor Truck Co., Detroit. Mr. Bolway has been 10 years in selling and organizing wholesale and retail automotive fields.

* * *

Harry Landsiedel has been chosen president of Dalton Adding Machine Co., Norwood, O., succeeding the late James M. Dalton. Mr. Landsiedel has been with the Dalton company for the past 21 years.

* * *

M. J. Miller has been appointed sales engineer in charge of the home district of Diamond Power Specialty Corp., Detroit. Mr. Miller formerly had charge of the Philadelphia district.

* * *

Harry F. Guggenheim, lieutenant commander of naval aviation during the war and son of the late Daniel Guggenheim, has been elected president of the $2,500,000 Daniel Guggenheim fund for promotion of aeronautics. H. I. Cone, rear admiral, retired, has been elected vice president.

* * *

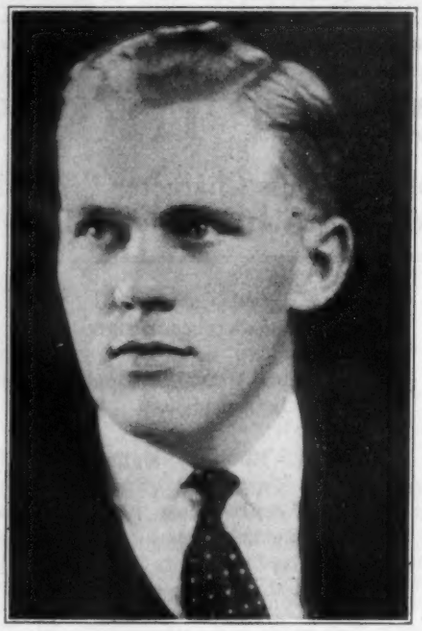
Leo LaFlam has resigned as superintendent of the Wheeling Stamping Co., East Wheeling, W. Va., to become assistant secretary of the West Virginia Manufacturers' association. Mr. LaFlam held the same position several years ago, but left to join the Wheeling Stamping Co.

* * *

T. D. Sampson, formerly hot mill superintendent at the Liberty works of Trumbull Steel Co., Warren, O., has resigned to become connected in a similar capacity with the McKeesport Tin Plate Co., McKeesport, Pa.

* * *

Alex J. Ekstrom, formerly and for many years chief engineer in charge of the Bennett iron mine and other western Mesabi properties of Pickands, Mather & Co., Cleveland, has resigned. A dinner recently was served in his honor at Hibbing, Minn. J. P. Schemmel has been appointed chief engineer



HUBERT D. BENNETT
Newly Elected President of Toledo Scale Co., Toledo, O., as Announced in IRON TRADE REVIEW, Jan. 28

under the consolidation plan of operating these properites.

* * *

Donald N. Watkins, formerly superintendent of blooming mills at the South Side works of Jones & Laughlin Steel Corp., Pittsburgh, has been appointed district sales manager of the Cleveland, Detroit and Indianapolis offices of General Refractories Co., at Cleveland. Prior to joining the Jones & Laughlin organization, Mr. Watkins was editor of *Blast Furnace and Steel Plant.*

* * *

E. T. Freeman, superintendent of Wisconsin Gray Iron Foundry Co., Milwaukee, has resigned because of ill health.

Dr. A. W. Francis and Dr. Christian V. Holland also have joined the staff. Dr. Francis formerly was national research fellow in chemistry at Massachusetts Institute of Technology. Dr. Holland has been engaged in natural gas research.

* * *

Rene Muller, representing Coutinho, Caro & Co. of Hamburg, Germany, is visiting this country. The Coutinho company is closely connected with steel works of Upper-Silesia and the Linke-Hofmann-Lauchhammer Works of Germany, and has the export sales agency of the United Czechoslovakian Steel Works.

* * *

Alexander D. Darragh, recently New York district sales manager of E. Arthur Tutein, Inc., has become affiliated with the Ludlum Steel Co., Watervliet, N. Y., in a sales capacity. Mr. Darragh formerly sold pig iron and steel for Carnegie Steel Co. and the Tennessee Coal, Iron & Railroad Co., at New York and Albany, for ten years. After the war he became assistant manager of sales for the former Consolidated Steel Corp., and when that interest disbanded, he reorganized the sales force of the Consolidated Rolling Mills & Foundry Co., Mexico City, Mexico.

* * *

John A. Denholm, formerly sales manager of Wright Wire Co., Worcester, Mass., has resigned to join the Hanover Wire Cloth Co., Chicago, in an executive capacity. Mr. Denholm previously was vice president and general sales manager of the Clinton-Wright Wire Co. in 1920 and then became assistant general sales manager of Wickwire Spencer Steel Co., formerly the Wickwire Steel Co., Buffalo. Effective Sept. 1, 1923, he was made general sales manager of the combined sales force of American Wire Fabrics Corp., Chicago, and Wickwire Spencer Steel Corp., and later vice president of the latter interest.

* * *

W. C. Sutherland, formerly superintendent of the seamless tube division of Pittsburgh Steel Products Co., Pittsburgh, has been appointed general superintendent of Pittsburgh Steel Co., succeeding Christopher J. Mogan, resigned. Mr. Sutherland became affiliated with the iron and steel industry in 1901 as a chemist at the South works of Illinois Steel Co., South Chicago, Ill. He joined the Pittsburgh Steel Products Co. in December, 1917.

Mr. Mogan has been with the industry nearly 40 years. He went with Pittsburgh Steel Hoop Co., Glassport, Pa., predecessor of Pittsburgh Steel Co., in 1899, became superintendent in 1904, and in 1908 was made assistant superintendent of the new Monessen, Pa., plant. Four years later he became general superintendent.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ORTON CRANE & SHOVEL CO. is the new name adopted by the Orton & Steinbrenner Co., 608 South Dearborn street, Chicago, better to describe the company's principal activity, the manufacture of locomotive cranes, crawling tread cranes, gas, electric and steam shovels, draglines and buckets. No other change is made, the ownership, management and officials remaining the same. P. A. Orton is president and general manager; E. B. Ayers vice president, Herbert Mertz secretary, Harry Shaffer treasurer, G. L. Niederst chief engineer, Alex Orton works manager and C. C. Case general counsel. The company's plant is at Huntington, Ind.

* * *

WADDELL STEEL CO., Niles, O., has re-elected directors, as follows: J. D. Waddell, W. H. Davis, A. J. Bentley, R. L. McCorkle and U. C. DeFord.

* * *

DWIGGINS WIRE FENCE CO., Anderson, Ind., has re-elected officers as follows: President, Lafe Swank; vice president, J. L. Vermillion; secretary and treasurer, J. E. VanDeventer.

* * *

YOUNGSTOWN BOILER & TANK CO., Youngstown, O., has elected James P. Keene president, Charles R. Vogel secretary-treasurer and as directors, R. I. Ingalls, Birmingham, Ala., R. D. Patterson, Dayton, O., and Philip Wick, Youngstown.

* * *

THE Allied Steel Castings Co., operating an open-hearth steel foundry at Harvey, Ill., is enlarging its cleaning room. Practically all the equipment required has been placed. The structural steel required for the addition has been placed with the Gage Structural Steel Co., Chicago.

* * *

PROGRESSIVE FOUNDRY CO., Rochester, N. Y., has been formed by consolidation of the Rochester Castings Corp. and the Progressive Co., with 2500 shares at $100 each and 7000 shares common stock no par value by H. S. Van Billiard, H. L. Crittendon and T. Stanton.

* * *

MEDFORD IRON WORKS, Medford, Ore., will be operated by E. G. Trowbridge, who has bought the interest of Harry D. Mills, the other stockholder. The latter has purchased the rights to a quartz mill patented by Mr. Trowbridge and will establish a plant at Carson City, Nev., for its manufacture.

* * *

PACIFIC STEEL BOILER CORP., recently incorporated under a New Jersey charter, has bought 15 acres at Bristol, Pa., and will build a 1-story plant at once. The new company owns and will operate the General Boilers Co., Waukegan, Ill., the Bristol plant and a selling organization.

* * *

PORTSMOUTH STOVE & RANGE CO., Portsmouth, O., has elected directors for the coming year: F. V. Knauss, J. B. Knauss, J. B. Knauss Jr. and P. A. Knauss. It has been decided to double the capacity of the enameling plant, to care for demands of an all-porcelain refrigerator department.

* * *

SENECA WIRE & MFG. CO., Fostoria, O., has elected L. E. Kinn president and general manager, J. A. Wonderly vice president and A. J. Welly secretary-treasurer. Directors are: Lester Cadwallader, C. W. Latshaw, Fred Manecke, J. A. Wonderly, L. E. Kinn, A. J. Welly and C. S. Green.

* * *

FLINT MALLEABLE CASTINGS CO., Flint, Mich., recently organized, with $500,000 capital has completed its plant and has started production. It has a capacity of 60 tons per day and is engaged principally on automotive parts. J. M. Barringer is president, C. W. Bonbright secretary and E. W. Atwood treasurer.

* * *

CHICAGO ELECTRIC CO., 740 West Van Buren street, Chicago, has bought from the Dreis & Krump Mfg. Co., Chicago, its overhead conveying system and will manufacture and market it in future. The Chicago Electric Co. previously handled a similar device and now will offer both hand and electrically operated systems.

* * *

CLEVELAND AUTOMATIC MACHINE CO., Cleveland, has re-elected officers. A. L. Garford president, Walter F. Brown vice president, H. M. Rich treasurer and David L. Johnson secretary. H. W. Rupple was elected a director to succeed Richard LeBlond of Cincinnati. Other directors are George P. Hahn, R. H. Scribner and C. E. Farnsworth.

* * *

LAVELLE FOUNDRY CO., Anderson, Ind., has elected T. A. Lavelle president, B. J. Lavelle vice president, H. B. McLaughlin secretary and Letitia Lavelle treasurer. Philip B. O'Neill was added to the board of directors, other directors being T. A. Lavelle, J. T. Lavelle, Harry McLaughlin, P. B. O'Neill, A. T. Dyle and B. J. Lavelle.

* * *

PORTSMOUTH STRUCTURAL STEEL CO., Portsmouth, O., recently incorporated with $50,000 capital, will erect a plant at once on Eleventh street, west of Washington street, which will be equipped with fabricating machinery. S. R. Wolfe, formerly of Pittsburgh, a structural steel engineer, will manage the company and associated with him are Fred M. Ruhlman, Maltby J. Ruggles Sr., Mark W. Selby and Charles E. Dowling, all of Portsmouth.

* * *

CYCLOPS STEEL CO. INC., with plant at Titusville, Pa., which has been operated for some time by C. S. Newhall and D. J. McLaughlin, receivers, will be operated by Charles T. Evans, who has leased the plant and bought the inventory. This lease is preliminary to formation of a company with ample working capital as soon as the receivers can give clear title. Mr. Evans has been with the company since 1917 and has been responsible for the quality of its steels since that time. For the past year he has been in complete charge of the plant. The mill and sales forces have been kept intact.

* * *

W H. WOODIN, head of the American Car & Foundry Co., and the American Locomotive Co. has been elected chairman of the board of the Brill Corp. Other directors are Samuel L. Curwen, Francis A. Lewis, E. Clarke Mason, E. P. Rawle, C. S. Sale and G. R. Scanland. The executive committee consists of W. M. Hager, chairman; S. L. Curwen and

W. H. Woodin. The board of directors elected the following officers of the new corporation which was organized recently to acquire the J. G. Brill Co., the Hall-Scott Motors Corp., and the Fageol Motors Co.; Samuel L. Curwen, president; G. R. Scanland, vice president; H. C. Wick, secretary, and S. A. Mallette, treasurer.

* * *

HILL-STANDARD MFG. CO., Anderson, Ind., has elected Hugh Hill president and general manager, June Hill vice president and secretary and Jesse Watts treasurer. Directors are the officers and Robert Hill.

* * *

STANDARD METAL CO., Indianapolis, Ind., A. L. Henry president, has bought the plant it has occupied on lease for 10 years. An addition will be made to the building to enlarge facilities.

* * *

FEDERAL DROP FORGE CO. has re-elected M. R. Carrier president and general manager and retained all officers and directors in their former positions. An extension of 40 feet is being built on the hammer department and other improvements being made.

* * *

THE J. L. SPITZER CO., New York, has been organized to conduct a scrap iron brokerage business. J. L. Spitzer, head of the company, was formerly district manager for the E. B. Leaf Co. Edward E. Spitzer and Franklin L. Sheriden are the other officers of the new company.

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THE Adams E. D. T. Inc., is the name of a new organization in South Bend, Ind., which will specialize in the manufacture of dies and tools, special and automatic machinery and machine work. It is headed by C. R. Adams, president and general manager. Other officers are Delos M. Coen, vice president, and L. M. Adams, secretary and treasurer. Mr. Adams served five years apprenticeship as an instrument maker in London, England. The first of the present year he severed his connections as engineer and superintendent of the Sibley Machine Co., which position he held for ten years. Prior to that time he was assistant engineer of the Chandler Motor Car Co. production engineer of the Fiat Motor Co.; general foreman of the Goodman Mfg. Co., general foreman of the Pierce-Arrow Motor Co. and tool designer of the St. Louis Car Co., automobile department.

Star Iron & Metal Co., New York, has increased capital from $10,000 to $50,000.

News of Societies

A REGIONAL conference of the National Safety council will be held in Louisville, Ky., March 3-4, at the Brown hotel, a joint industrial and street and highway conference. A tentative program has been drawn up and includes the following papers:

Thursday, March 4

MORNING SESSION

Foundry Section

"Hazards of Handling Hot Metal," by F. C. Bennett, Buckeye Steel Castings Co., Columbus, O.

"Protective Clothing Needed by Foundry Workmen."

"Foundry Housekeeping Problems," by Samuel Stout, Mengel Co., Louisville, Ky.

Machine Shop Section

"Education of Machine Tool Operators," by R. F. Thalner, Buick Motor Co., Flint, Mich.

"Safety in the Use of Chain and Cable Slings."

"Grinding Wheel Hazards."

AFTERNOON SESSION

General Section

"Value of Health Work in Industry," by Dr. C. F. N. Schram, Fairbanks, Morse & Co., Beloit, Wis.

"Posters as an Educational Factory," by E. G. Quesnel, Commonwealth Steel Co., Granite City, Ill.

* * *

Of the probable eight technical sessions scheduled for the New England regional meeting of the American Society of Mechanical Engineers at Providence, R. I., May 3-6, two will be on machine shop practice, and one each on industrial power, wood industries, central station power, textiles, and education and training for the industries. Chairman Luther D. Burlingame of the executive committee is drawing up the program.

* * *

The fortieth annual convention of the Engineering Institute of Canada was held in Toronto Jan. 27-29, attended by over 400 members from all parts of the Dominion. The following officers were elected: President, Major George A. Walkem, Vancouver, B. C.; vice presidents, G. Dawson, Calgary, Alta.; Peter Gillespie, Toronto, K. B. Thornton, Montreal, W. G. Mitchell, Kenogami, and G. D. Macdougall.

Major Walkem, addressing the meeting, urged improvement in the elementary grounding of students and asked the institute to co-operate with other societies of professional engineers to secure uniform legislation in engineering matters. Arthur Surveyer, Montreal, retiring president, stated that engineers need more teaching in finance and economics.

Convention Calendar

Feb. 12—Eastern States Blast Furnace and Coke Oven association. Meeting in Pittsburgh. Charles R. Meissner, Weirton, W. Va., secretary.

Feb. 15-17—American Institute of Mining and Metallurgical Engineers. Annual meeting Engineering Societies building, New York. Dr. H. Foster Bain, 29 West Thirty-ninth street, New York, secretary.

March 3-5—American Management association. Annual convention at Hotel Astor, New York. H. LeRoy Neilson, Delco Light Co., Dayton, O., secretary.

April 6-8—American Oil Burner association. Annual convention and exposition, Book-Cadillac hotel, Detroit. Office of secretary, 350 Madison avenue, New York.

April 22-24—American Electrochemical society. Meeting, Chicago Page hotel, Chicago. Colin G. Fink, Columbia university, New York, secretary.

April 28-30—National Foreign Trade council. Thirteenth annual convention, Francis Marion hotel, Charleston, S. C. O. K. Davis, India house, 1 Hanover square, New York, secretary.

May 3-6—American Society of Mechanical Engineers. New England regional meeting, Providence, R. I. Calvin W. Rice, 29 West Thirty-ninth street, New York, secretary.

May 10-15—Association of Chemical Equipment Manufacturers, Inc. Second chemical equipment and process engineering exposition, Public hall, Cleveland. Roberts Everett, 1328 Broadway, New York, secretary.

May 13-15—American Gear Manufacturers' association. Tenth annual meeting, Book-Cadillac hotel, Detroit. T. W. Owen, 2443 Prospect avenue, Cleveland, secretary.

May 13-15—American Gear Manufacturers' association. Annual meeting at Book-Cadillac hotel, Detroit. T. W. Owen, 2443 Prospect avenue, Cleveland, secretary.

May 17-22—American Supply and Machinery Manufacturers' association. Annual convention, Hotel Statler, St. Louis. F. D. Mitchell, 1819 Broadway, New York, secretary.

May 17-22—American Supply and Machinery Manufacturers' association. Annual convention at Hotel Statler, St. Louis. F. D. Mitchell, 1819 Broadway, New York, secretary.

May 20-21—American Society for Steel Treating. Spring sectional meeting, Hotel Bond, Hartford, Conn. W. H. Eisenman, 4600 Prospect avenue, Cleveland, secretary.

June 9-12—National Association of Purchasing Agents. Eleventh annual convention and exposition, Ambassador hotel and Auditorium, Los Angeles. W. L. Chandler, Woolworth building, New York, secretary.

June 9-12—National Association of Purchasing Agents. Annual convention and exposition at Los Angeles. W. L. Chandler, Woolworth building, New York, secretary.

Will Enlarge Hot Sheet Mill Department

Contracts for eight 30-inch hot sheet mills have been let by the Weirton Steel Co., Weirton, W. Va., which when completed will give the company a complement of 17 units. This is part of the extensive program of improvements planned by the Weirton officials last August when an appropriation of $2,250,000 was authorized. During the latter part of January contracts for an 800-ton blast furnace and 49 by-product coke ovens were awarded. Additional work projected for the Weirton division of the company includes a tube mill of the pilger type.

Obituaries

LIEUT. COL. LLOYD G. McCRUM, president, Richmond Radiator Co., New York, died at New Haven, Conn., Feb. 2, aged 49. Col. McCrum started his career as a telegraph operator for the Baltimore & Ohio then went into newspaper reporting, and at 19 became assistant postmaster at Allentown, Pa. In his early twenties he organized a company which took over the Uniontown Acme Radiator Co. at Uniontown, Pa., joined it with the Richmond boiler works at Norwich, Conn., erected an enamelware plant at Uniontown, and associated with these industries a vacuum cleaner business. During the World war he was in charge of production at the Rock Island arsenal, Ill., later entering the coal business as general manager of W. H. Bradford & Co. In 1922 he became general manager of the Richmond Radiator Co. and was elected president a year ago.

* * *

Arthur Lazier, president of Lazier Gas Engine Co., Buffalo, died at his office Jan. 22 at the age of 60.

* * *

Lieut. John Albert Tobin, U. S. N., retired inventor of a bronze bearing his name, a form of frictionless brass, died recently at the age of 74.

* * *

Morris Kriggs, general manager of the plant at Toledo, O., of the American Bridge Co., died Feb. 8 at the age of 64.

* * *

Charles C. Greening, of Dundas, Ontario, died Jan. 26 at the age of 73. He founded the Greening Wire Works with his father.

* * *

Adelmer M. Bates, president of Bates Valve Co., Chicago, died Jan. 21 in New York, on the way to his hotel from a theater.

* * *

Charter R. Wynn, for 26 years connected with the Phoenix Iron Co., Philadelphia, and assistant treasurer since a year ago, died at Oak Lane, Philadelphia, Jan. 29.

* * *

Lewis T. Wolle, president of the Durham Coal & Iron Co., Chattanooga, Tenn., and president and director of Chattanooga Coke & Gas Co., died at Atlantic City, Feb. 3.

* * *

W. C. Mundt, president of Charles Mundt & Sons, Jersey City, N. J., dealers in metals, died of heart disease at Palm Beach, Fla., Feb. 6, at the age of 47. He had been president of the company for 12 years.

* * *

Dr. Herman L. Kellner, 52, head of the scientific staff of Bausch & Lomb Optical Co., Rochester, N. Y., died Jan. 28. Dr. Kellner was born in Germany and educated at the universities of Berlin and Jena.

* * *

George L. Graham, retired, of Miami, Fla., died Thursday, Jan. 28, at the age of 59. Mr. Graham was formerly connected with the Chase Machine Co., Cleveland, which was taken over by the Boom Boiler & Welding Co., Cleveland, several years ago.

* * *

Prof. William W. Bird, president of Broadway Iron Foundry, Cambridge, Mass., for many years head of the mechanical engineering department of Worcester Polytechnic institute, died recently at Worcester, Mass.

* * *

Alfred E. Coleman, 62 vice president and director of W. Bingham Co., Cleveland, iron steel and hardware jobber, died Jan. 30 in Oakland, Calif. Mr. Coleman was born in Cleveland May 2, 1863, and started with the Bingham company almost 40 years ago, June 1, 1886.

* * *

A. Parker Nevin, since 1912 secretary and director of the Watson-Stillman Co., New York, machinery manufacturer, died Feb. 2, after a short illness. Mr. Nevin was born at Ridley Park, Pa., April 6, 1875, and graduated from Princeton university in 1895. For many years he was counsel for the National Association of Manufacturers.

* * *

Louis E. Berner, vice president and secretary of Hetherington & Berner, Indianapolis, structural iron dealers, died recently at his home in that city at the age of 48. Mr. Berner had been with the company since 1919, prior to which time he practiced medicine in Indiana for 12 years. He was born in Indianapolis and graduated from Indiana university.

* * *

Joseph Brower, 69, one of the pioneers in the iron industry of Birmingham, Ala., died recently in that city. He was born in Philadelphia, where he learned the trade of iron molder, and in 1885 went to the Southern city and organized the Avondale Stove & Foundry Co. He was president of this company until his retirement in 1905.

* * *

I. H. Thedieck, 71, president of Sidney Machine Tool Co., Sidney, O., died in Columbus, O., Jan. 20, after a brief illness. Mr. Thedieck became associated with the Sidney company in 1914 as chairman of the board of directors, and was prominent among machine tool builders. He was also president of Monarch Machine Tool Co., Sidney, and a director in the Whipp Machine Tool Co., Anderson Body Co. and Sidney Telephone Co.

* * *

Carter Miller, advertising Manager of Timken Roller Bearing Co., Canton, O., died recently after a brief illness. He came to the Timken company six years ago and was promoted rapidly. Mr. Miller was born in Bay City, Mich., and after primary schooling in that city attended Kenyon college, Gambier, O., graduating in 1919. While at college he was a candidate for the Rhodes scholarship but declined the examination.

* * *

Arthur R. Bush, manager of industrial department, General Electric Co., Schenectady, N. Y., died Jan. 24. Mr. Bush was born in Fall River, Mass., in 1861 and graduated from Annapolis academy in 1882, serving two years thereafter in the navy. In 1892 he became district engineer of Edison General Electric Co. in New England, resigning in 1904 to become vice president of Union Bag & Paper Co. In 1906 he returned to General Electric Co. as manager of the power and mining department.

* * *

Charles McKnight, 66, former president of Carbon Steel Co., Pittsburgh, died at Atlantic City, N. J., Jan. 28. He was also a founder in 1906 and for some years treasurer of the Midland Steel Co., Midland, Pa., later made a part of the Pittsburgh Crucible Steel Co. In 1899 Mr. McKnight and associates purchased the S. Jarvis Adams Co. iron foundry, established in 1837, and changed the name to Pittsburgh Iron & Steel Foundries Co. in 1912. He served as treasurer, director and later president until his death, with this company, now part of the Mackintosh-Hemphill Co., Pittsburgh.

Current Statistics of Industry

Malleable Castings Make Gain in January

Washington, Feb. 9.—Production of malleable castings in December totaled 65,878 tons, as reported by 142 companies to the department of commerce. This was 58.9 per cent of capacity compared with 55.8 per cent in November and 50.9 per cent in December 1924. Bookings dropped in December. Further comparisons follow:

1924	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
December ..	58,773‡	50.9	46,541	115,474
1925				
January	66,367‡	57.6	61,140	115,179
February	60,220†	53.0	49,673	113,530
March	61,245†	53.5	56,481	114,506
April	62,962*	55.1	55,001	114,195
May	61,003*	53.9	50,594	113,260
June	58,881*	51.5	47,303	114,284
July	57,229†	50.2	56,933	114,144
August	56,829*	49.6	48,691	114,455
September ..	58,573	51.3	49,832	114,217
October	68,234*	60.6	65,495	112,609
November ..	61,845*	55.8	55,627	110,793
December ..	65,878*	58.9	54,066	111,852

†Includes 4 plants reported idle.
*Includes 5 plants reported idle.
‡Includes 6 plants reported idle.

Steel Barrel Sales Gain

Washington, Feb. 9.—Unfilled orders for steel barrels, for delivery beyond 30 days, totaled 1,377,060 at the end of December, according to reports of 31 establishments operating 36 plants, to the department of commerce. Unfilled orders for delivery within 30 days totaled 368,286 the largest since April. Production dropped from 498,929 in November to 467,485 in December, while shipments were dropping from 498,070 to 474,742. Further comparisons of shipments, production and unfilled orders follow:

1924	Production	Shipments	Unfilled orders for delivery within 30 days	Unfilled orders for delivery beyond 30 days
December	413,785	407,474	312,502	1,273,532
1925				
January	420,127	415,040	345,696	1,028,551
February	413,823	407,781	313,544	1,022,580
March	505,429	510,928	399,940	864,920
April	594,971	605,424	411,063	726,499
May	570,962	569,670	313,123	637,230
June	514,913	508,880	269,964	582,630
July	497,152	506,894	314,727	974,656
August	498,449	495,736	263,588	851,079
September ..	510,869	503,221	237,580	774,996
October	553,545	555,981	356,626	534,278
November ..	498,929	498,070	251,567	996,978
December	467,485	474,742	368,286	1,377,060

River Traffic Lower

Pittsburgh, Feb. 9.—Traffic on the Allegheny river decreased in December from November, 238,447 tons and 375,958 tons respectively. On the Monongahela river it remained practically the same, 1,825,568 tons for December and 1,863,566 tons for November. Ohio river tonnage transported in December was 836,650 tons, compared with 603,125 tons in November. The Monongahela river tonnage consisted largely of coal shipments, 1,532,356 tons being transported in December.

Iron and steel products shipped over the Allegheny river in December amounted to 610 tons, with 2050 tons being moved over the Monongahela. Iron and steel tonnage shipped over the Ohio in that month totaled 37,423 tons. A list of monthly shipments of iron and steel products follows:

	Allegheny river	Monongahela river	Ohio river
Decemeber	610	20,506	37,423
November	530	25,800	49,041
October	15	22,200	25,260
September	3,560	31,430	22,987
August	.....	29,010	42,004
July	.....	23,960	35,835
June	132	30,000	27,791
May	735	32,479	42,466
April	797	23,350	18,375
March	200	22,328	27,000
February	900	19,350	19,837
January, 1925	.....	23,804	17,825
December	1,103	31,720	29,562
November	7,369	26,402	19,033
October	5	14,600	12,700
Totals, 1923	1,064	291,689	190,336
Totals, 1924	56,720	266,074	216,138
Totals, 1925	7,479	304,217	365,844

Furniture Sales Gain

Washington, Feb. 9.—Orders for December of steel furniture were valued at $2,454,277, the heaviest month of the year, based on reports of 32 manufacturers in the business group to the department of commerce. Shelving orders dropped off from a valuation of $686,814 in November to $620,947 in December. Further comparisons of orders, shipments and unfilled orders follow:

BUSINESS GROUP

1924	Orders received	Shipments	Unfilled orders
1925			
January	2,206,952	1,972,137	1,455,890
February	1,986,151	1,939,097	1,501,460
March	2,012,322	2,027,863	1,482,859
April	1,964,959	2,009,199	1,466,428
May	1,855,552	1,918,869	1,383,424
June	1,792,656	1,805,599	1,390,540
July	1,823,435	1,810,754	1,445,897
August	1,664,649	1,688,965	1,358,386
September	1,969,769	1,816,484	1,535,231
October	2,170,076	2,130,498	1,406,117
November	1,975,117	1,885,505	1,496,242
December	2,454,277	2,418,577	1,531,505

SHELVING

1925			
March	$ 606,754	$ 539,972	$ 515,434
April	566,834	650,769	436,048
May	523,426	549,272	372,296
June	501,182	514,117	360,089
July	510,815	482,187	398,973
August	516,694	452,716	447,255
September	624,676	542,173	511,689
October	730,911	622,471	626,933
November	686,814	574,905	739,831
December	620,947	788,461	570,941

Engine Shipments Gain

Washington, Feb. 9.—Shipments of locomotives totaling 113 in January were the heaviest since December, 1924, according to reports to the department of commerce from the principal builders. Unfilled orders took a decided drop from 672 in December to 580 in January. Despite the drop, business on the books at the end of January was the highest, other than December, since May 1924. Following are further comparisons of shipments and unfilled orders.

Year and month	—Shipment— Total	Domes.	Unfilled orders Total	Domes.
1920 monthly ave.	199	110	1,323	894
1921 monthly ave.	112	69	337	206
1992 monthly ave.	106	88	889	791
1923 monthly ave.	226	249	1,592	1,511
1924 monthly ave.	122	110	479	424
1925 monthly ave.	94	68	438	361
1925				
January	90	45	407	351
February	85	73	397	343
March	109	93	447	351
April	92	82	477	362
May	96	68	467	353
June	110	61	397	300
July	66	58	378	283
August	104	91	309	225
September	94	50	363	296
October	79	54	497	397
November	98	52	548	448
December*	93	75	672	576
Total, 1925*	1,116	802	.....	.....
1926				
January	113	91	580	526

*Revised.

Shipments of locomotives in December included 38 steam, 92 gasoline and 9 electrics to foreign countries as follows:

Countries	Steam number	Gasoline number	Electric Locomotives Railway number	Electric Locomotives Mining and Industrial number
Canada	5	82	.....	2
British Honduras	2	.....	.....	.....
Mexico	5	3	.....	1
Trinidad and Tobago	....	1	.....	.....
Cuba	11	.....	3	.....
Chile	8	.....	.....	.....
Peru	2	.....	.....	.....
Venezuela	....	2	.....	.....
Japan	3	3	.....	.....
Philippine Islands	2	1	.....	.....
British South Africa	....	.....	.....	3
Total	38	92	3	6

Shipments from the United States to noncontiguous territories

	Locomotives —steam number
Alaska	1
Hawaii	1
Porto Rico	2

F. E. Schmitt, *Engineering News Record*, New York City, discussed the testing of structural steel at the regular monthly meeting of the New York section of the American Society for Steel Treating, New York City, Wednesday evening, Jan. 27.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

FRESNO, CALIF.—O. R. Osterode, 1717 Van Ness avenue, will build a 1-story machine shop 75 x 140 feet.

LOS ANGELES—Brombacher Iron Works has been given a contract for a foundry for the Warman Electric Foundry Co. at 3334 East Slauson avenue, designed for additional units later.

OAKLAND, CALIF.—F.A.B. Mfg. Co., 1850 Seventh street, manufacturer of pumping machinery and parts, will build a 1-story plant 60 x 200 feet.

SACRAMENTO, CALIF.—Schaw Pipe & Steel Works, Sixteenth and South B streets, is building a 1-story annex, 100 x 160 feet.

BRIDGEPORT, CONN.—Bead Chain Co. has awarded a contract for a plant at Mountain Grove and State streets.

BRISTOL, CONN.—Electrical Brass Co. Inc. has been incorporated with $50,000 capital to conduct a gas and electrical appliance manufacturing business by Charles W. Stewart, Elizabeth W. Stewart, and Paul D. Stewart, all of Bristol.

NEW BRITAIN, CONN.—The foundry building of the North & Judd Mfg. Co., collapsed recently from the weight of snow on its roof. Plans for replacement have not been announced.

NEW HAVEN, CONN.—Himmel Brothers Co. Inc. has been incorporated with $250,000 capital to conduct a builders' hardware and woodworking materials manufacturing business by Fred Himmel and Isidore Himmel of New Haven, and Curtis K. Thompson of West Haven, Conn.

TORRINGTON, CONN.—Progressive Mfg. Co., 52 Norwood street, manufacturer of screws, rivets will build a 2-story plant 55 x 141 feet.

WATERBURY, CONN.—Lux Clock Co. will build a 5-story addition 48 x 325 feet and a 1-story power house 45 x 122 feet. Thomas F. Freny is architect.

WATERBURY, CONN—Waterbury Fastener Co. manufacturer of snap fasteners, is having plans made for rebuilding its burned plant. George F. Pullen is manager.

WILMINGTON, DEL.—Standard Forgings Corp. has been incorporated with $22,000,000 capital by T. L. Croteau and associates. Corporation Trust Co. of America is attorney.

DAVENPORT, FLA.—Polk Steel & Iron Works Inc. will build a 1-story plant for production of ornamental iron products and fire escapes.

ALBANY, GA.—Central of Georgia railroad, C. E. Weaver, engineer maintenance of way, Savannah, Ga., has let contract for 9-stall roundhouse to Joseph E. Nelson & Sons, 3240 South Michigan boulevard, Chicago.

COLUMBUS, GA.—Hardaway Contracting Co., B. H. Hardaway manager, has bought 8-acre site with 50 x 300-foot building and will establish repair shop for locomotives and other heavy work, including general machine shop.

SAVANNAH, GA.—Southern States Iron Roofing Co. has been incorporated with $700,000 capital by Harry Fulenwider, 643 Victory drive, and others.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Coleman Lamp Co., C. W. Coleman president, Second and St. Francis streets, Wichita, Kans., is planning a 1-story branch plant at West Forty-seventh street and St. Louis avenue.

CHICAGO—United Metals Corp., 2121 West Twenty-first street, has been incorporated with $5000 capital to manufacture metals, alloys and by-products by I. J. Goldberg, Jerry Ryjack. Tarnopol & Flamm, First National bank building, are correspondents.

CHICAGO—Midwest Hardware Mfg. Co., 10 North Clark street, has been incorporated with $15,000 capital to manufacture hardware by Fred C. Ralson, L. W. Kent and Robert E. Clark. Simons & Desouchet, 10 North Clark street, are correspondents.

CHICAGO—Hydraulic Oil Co., 840 Otis building, has been incorporated to manufacture hydraulic oil well cleaning machines, tanks and appliances by Peter J. Kasper, Frederick J. Kasper, George J. Omalley. Frederick J. Kasper, 849 Otis building, is correspondent.

CHICAGO—Crane Co., R. T. Crane president, 836 South Michigan avenue, will build a 3-story plant addition 120 x 475 feet and train shed at Kedzie and Forty-first streets. Graham, Anderson, Probst & White are architects.

CHICAGO—C. E. Peterson Co., J. J. Knight president and treasurer, 4914 Wentworth avenue, manufacturer structural material, will build a 1 and 2-story factory and warehouse 330 x 525 feet at Hoyne avenue and Eighty-second street.

CHICAGO—Mid-City Auto Body & Wagon Works Inc., John Zimka president, 401 North Morgan street, will build a 1-story auto body plant 85 x 125 feet at Grand avenue and Armour street. H. M. Garriott, Indianapolis, is architect.

CHICAGO—Refrigerator Transit Co., 140 South Dearborn street, has been incorporated with 400 shares no par value to build refrigerator cars and railroad equipment by Robert N. Erskine, P. E. Francis, and P. E. Matthews. Kraft & Erskine, 517 Harris Trust building, are correspondents.

EVANSTON, ILL.—Toy Tinkers, Ridge avenue and Leon place, will build a 4-story plant to give enlarged facilities.

KANKAKEE, ILL.—Big Four railroad will build an extension to its roundhouse and a service building at its engine terminal here.

MELROSE PARK, ILL.—Electrical Engineers Equipment Co., Fay Woodmansee president, 710 West Madison street, Chicago, has let contract to Stone & Webster Co. Inc., 38 South Dearborn street, for a 1-story addition 270 x 280 feet and 2-story 38 x 70 feet, at Twenty-fifth and Division streets.

WEST FRANKFORT, ILL.—American Boiler Washing Device Co. has been incorporated with $200,000 capital to manufacture boilers and accessories by Elza Isaacs, J. M. Harris and H. O. Carlson. Walter W. Williams, Benton, Ill., is correspondent.

FORT WAYNE, IND.—General Electric Co., C. H. Matson, superintendent of construction, 1635 Broadway, has let contract to the Buesching Hagerman Co., 402 East Superior street, for a 1-story foundry 81 x 121 feet.

INDIANAPOLIS—Interstate Public Service Co. is making plans for rebuilding of burned portion of its machine shop at Scottsburg, Ind.

INDIANAPOLIS—Standard Metal Co., Georgia and Pennsylvania streets, manufacturer of sheet steel products, A. L. Henry president, is having plans made for a 4-story addition to its plant.

INDIANAPOLIS—Iceola Corp. has been in-

Shape Exports Drop

EXPORTS of structural shapes dropped in December from November. Further analysis of data presented by the department of commerce reveals that Canada was the largest buyer of plain structural material and Cuba the heaviest importer of fabricated structurals. Argentina imported the largest tonnage of ship and tank plates and also the heaviest total of metal lath. Following are further comparisons of destination of structural exports for December:

DESTINATION OF STRUCTURAL EXPORTS FOR DECEMBER, 1925

Countries	Structural shapes Not fabricated tons	Structural shapes 6046 Fabricated tons	Ship and tank plates punched or shaped pounds	Metal lath pounds
Netherlands	.....	.....	.....	5,970
Spain	.....	.....	.....	5,354
United Kingdom	18	.....	.....	121
Canada	7,450	79	815	126,744
Costa Rica	.....	18	.....	8,172
Guatemala	.....	447	.....	3,728
Nicaragua	.....	.....	23,917	.....
Panama	62	2	.....	3,220
Salvador	.....	85	.....	7,946
Mexico	396	32	92,141	6,751
Newfoundland and Labrador	18	.....	.....	4,300
Bermuda	.....	.....	2,085	.....
Jamaica	16	3	.....	669
Cuba	540	1,141	81,760	6,232
Dom. Republic	.....	.....	6,320	.....
Haiti	105	.....	.....	294
Argentina	226	247	273,180	152,222
Bolivia	6	.....	.....	.....
Brazil	.....	139	37,890	28,701
Chile	182	49	13,875	9,922
Colombia	456	249	.....	67,086
Ecuador	.....	5	21,755	.....
British Guiana	.....	.....	.....	3,738
Peru	21	12	.....	22,980
Uruguay	.....	.....	.....	5,854
Venezuela	91	68	2,864	98,807
Str. Settlements	.....	38	.....	.....
China	.....	.....	.....	31,749
Java and Madura	13	.....	.....	.....
Honduras	.....	1	.....	.....
Japan	.....	.....	.....	48,022
Philippine Is.	7	.....	.....	.....
Australia	.....	.....	.....	26,404
British South Africa	2	.....	.....	3,136
Totals	9,640	2,615	556,602	678,122

Industrial Business Changes

EASTERN executive and export sales offices of Joseph T. Ryerson & Son, New York, have been moved from the twentieth to the nineteenth floor at 30 Church street. Harry R. Heneage is in charge.

* * *

Shepard & James, Indianapolis, Ind., have opened a machine shop at 21 North Alabama street.

* * *

American Iron & Metal Co., Indianapolis, has opened an office at 238 West Pearl street.

* * *

Ellison Brass Mfg. Co., Jamestown, N. Y., has changed its name to the Ellison Bronze Co. Inc.

* * *

Pittsburgh Crucible Steel Co. has removed its sales office at Cleveland to 1120 Keith building.

* * *

Postalwait Machine Co., Indianapolis, Ind., has opened a plant at 1841 Ludlow avenue, Indianapolis.

* * *

Bethlehem Steel Co. has moved its Los Angeles offices to the Pacific Finance building, 621 South Hope street.

* * *

H. B. Kendall & Co., Detroit, has been appointed sales representative by the Latrobe Tool Co., Latrobe, Pa.

* * *

Meaker Galvanizing Co., Chicago, has changed its name to the Meaker Co. Knapp & Campbell, 208 South LaSalle street, are attorneys for the company.

* * *

May Brass & Foundry Co., Chicago, is making arrangements to move its plant to Ladoga, Ind., where larger facilities will be available.

* * *

Bruce Products Co., Detroit, has bought a plant at Howell, Mich., where it will manufacture its line of metal finishing materials.

* * *

Reading Chain & Block Corp., Reading, Pa., manufacturer of chain hoists and electric handling equipment, has opened an office at 327 First avenue, in charge of Lloyd W. Lutz, for several years in the employ of the company.

* * *

Eagrow Co., Milwaukee, has changed its name to the Ampco Metal Golf Club Co. Theodore Marker is secretary and manager.

* * *

Riley-Fredericks Co., Milwaukee, has changed its name to the Riley Power Equipment Co., with headquarters at 209 Grand avenue.

* * *

Sidney B. Roby Co., 208 South avenue, Rochester, N. Y., has been appointed sales agent for the Geometric Tool Co., New Haven, Conn.

* * *

Ohio Injector Co., Wadsworth, O., manufacturer of valves, steam injectors, etc., has established a branch office at 30 National building, Cleveland, in charge of S. L. Dalzell.

* * *

Reading Steel Casting Co., Reading, Pa., has opened a district sales office and warehouse at 20 South Madison street, Tulsa, Okla., in charge of L. Kennedy.

* * *

Nordyke & Marmon Co., Indianapolis, Ind., has changed its name to Marmon Motor Car Co. Officers remain the same. A supply depot has been established at Antwerp to care for European demand for Marmon cars.

* * *

Velie Motors Corp., Moline, Ill., Edwin McEwen general manager, is moving its equipment for the manufacture of motors from Marion, Ind., to Moline, one step in centralizing its production at the home plant.

* * *

Celite Products Co., Los Angeles, has moved its main offices from the Van Nuys building to the Celite building, 1320 South Hope street. George T. Gillette, who has been purchasing agent for 13 years, has retired and is succeeded by J. W. McKenzie, secretary of the company.

* * *

Charles A. Strelinger Co., Detroit, has been appointed exclusive sales agent for the Defiance Machine Works, Defiance, O., in the lower peninsula of Michigan. The representation covers the entire line of metalworking machinery.

* * *

Galion Iron Works Co., Galion, O., manufacturer of road building and contractors machinery, will establish a warehouse and distributing plant at Birmingham, Ala., in charge of E. J. Saxton. This center will cover Alabama, Georgia, Mississippi and Louisiana.

* * *

Independent Electric Machinery Co., Kansas City, Mo., has bought a 3-story building 75 x 135 feet, Southwest boulevard and Central street, and will move its plant there. Its product is electric heating pots and switchboards. John E. Launder is president.

* * *

Willey-Ellis Co., recently formed by merger of the Willey Co., Philadelphia, and the Ellis Drier & Elevator Co., Chicago, will have its executive offices at 210 North Thirteenth street, Philadelphia. Factory offices will be maintained at 1201 South Talman avenue, Chicago and at Columbia, Pa., where its manufacturing plants are situated.

* * *

The Braeburn Alloy Steel Corp., Braeburn, Pa., has established a general sales office in the First National Bank building, Pittsburgh, under the direction of H. Oliver Williams, vice president in charge of sales. In connection, the Pittsburgh district sales office is being operated under the direction of L. M. Brown as district manager. He is assisted by D. H. Horne and W. Z. Burns. A Cleveland district sales office has been established at 310 Union Mortgage building under the direction of A. G. Cappel as resident manager, assisted by Emmet Leckner.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.75 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.50
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent	nominal
Indian minimum 47 per cent	nominal
Caucasian, 53 to 55 per cent	
....Washed, 41 to 43 cents c.i.f. tidewater	

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$17.50
Washed gravel, imported duty paid eastern tidewater, per net ton	17.50 to 18.00

corporated with $500,000 capital to manufacture electrical refrigerating machinery, by W. N. Thompson, formerly president of the Stutz Motor Car Co. of America, Addison J. Perry and Walter Myers. It has bought equipment of Valley Engineering Co., Dayton, O., and will remove it here.

DAVENPORT, IOWA—Blackhawk Foundry & Machine Co., W. Voss president, 323 Clark street, is having plans drawn for a 2-story foundry addition 100 x 110 feet.

WICHITA, KANS.—Service Foundry Co. has been incorporated with $50,000 capital to operate a gray iron foundry.

WICHITA, KANS.—W. W. Feed Grinder Co., 214 South Wichita street, manufacturer of grinding machines and parts, will build a 1-story plant 100 x 265 feet, general contract to A. B. Hungerford Construction Co.

BALTIMORE, MD.—Trimble & Fink, 927 Linden avenue, John H. Trimble president, is having plans made for a new machine shop.

BALTIMORE, MD.—Superior Brass Works Inc. has been incorporated by Thomas M. Dixon, 4208 Main avenue.

BALTIMORE—Myers Winch Co. has been incorporated to manufacture winches, by D. H. Rose, 11 Calvert building.

WEST BROOKFIELD, MASS.—Wheeldon Wire Co. is having plans made for rebuilding its burned plant and replacing equipment.

BATTLE CREEK, MICH.—Duplex Printing Press Co. is having plans made for an addition 110 x 600 feet, to increase capacity nearly 50 per cent.

DETROIT—Simplex Casting Machine Co. has been incorporated with $25,000 capital by Lyle Parmeter, 1350 Copeland street, Ernest Flatman and Theodore Max.

DETROIT—Universal Cooler Co., Albert H. Meinke president, 605 Book building, plans an addition of two stories to its plant at 2736 Twelfth street.

DETROIT—Detroit & Michigan Stove Co., William T. Barber manager, 6900 East Jefferson street, is having plans made for a 5-story factory building 82 x 174 feet.

DETROIT—Armor Plate Engineering Co. has been incorporated with 1000 shares no par value to manufacture tools and operate a foundry by John E. Martz, 919 Bank building, Mildred P. Herman and Manfred H. Herman.

ECORSE, MICH.—National Smelting & Refining Co., Harry Grevnin secretary and treasurer, 1842 Livernois street, is having plans made for two 1-story additions 60 x 200 feet and 70 x 150 feet.

FLINT, MICH.—Arnold Check Writer Co. Inc. has been incorporated with $100,000 capital to manufacture a check writing machine and other devices by W. W. Arnold, Grand Ledge, Mich., T. J. Mellin, Owosso; and Paul C. Koenka, Flint.

SAGINAW, MICH.—Saginaw Products Co., a division of General Motors Corp., is enlarging its malleable foundry to increase production from 2000 to 3000 tons per month. Electric furnaces and cupolas will be added.

COLUMBUS, MISS.—F. M. Jacobs Foundry & Machine Co., F. M. Jacobs president, will rebuild burned portion of its plant.

JOPLIN, MO.—Empire Electric Machinery Co. has been incorporated with $200,000 to manufacture washing machines.

KANSAS CITY, MO.—Volney Co. has been incorporated to manufacture mining machinery by M. J. Bordman, 2710 Okie street.

KANSAS CITY, MO.—Harrah Mfg. Co., 1326 Main street, has been incorporated with $50,000 capital by J. A. Harrah, to manufacture electrical equipment.

KANSAS CITY, MO.—J. Goldberg & Sons, 800 East Eighteenth street, have plans under consideration for addition to their foundry and machine shop.

ST. LOUIS—A-C Brake Shop, 2739 Locust boulevard, manufacturer of automobile brakes will build a 1-story plant 125 x 135 feet.

ST. LOUIS—Perfection Equipment Co. Inc., 406 Market street, has been incorporated with $25,000 capital by E. F. Rorke, manager, and associates.

ST. LOUIS—Koken Co., W. F. Koken president, 2528 Texas avenue, is planning factory development at 3300 Morganford road. Plans are drawn for foundry 150 x 150 feet, with others to follow. L. A. Carter, 3560 Chauteau avenue, is consulting engineer.

JERSEY CITY, N. J.—Machinery Sales Co., 907 Communipaw avenue, has been incorporated with $125,000 capital to deal in machinery and tools.

NEWARK, N. J.—Atlas Stove & Casting Co. has been incorporated with $50,000 capital Max Danzig, Israel Danzig and others. Scher & Albert, Newark, are attorneys.

RARITAN, N. J.—Equipment is now being purchased for a foundry addition for the A. P. Grimm Foundry Co., this city.

ORANGE, N. J.—Devices Corp. of New Jersey has been incorporated with $15,000 capital to manufacture machinery by Ludwig Boettcher, Charlotte Boettcher, Orange; Charles Hillebrand, West Orange. Daniel J. Brennan, Orange, is attorney.

WEST ORANGE, N. J.—Metal Products & Engineering Corp., 11 Central avenue, has been incorporated with $125,000 capital to manufacture sheet metal specialties and apparatus for air conditioning. F. J. Mead is president.

CHARLOTTE, N. C.—Keystone Pipe & Machinery Co. has been incorporated with 500 shares of $100 each by E. G. Pflaum and associates.

WINSTON-SALEM, N. C.—Automatic Appliance Corp. has been incorporated with $100,000 capital to manufacture oil burners and other appliances by H. A. Scott and T. T. Scott.

ALBANY, N. Y.—Albany Hardware & Iron Co., 41 State street, is having plans made for a 2-story service, repair and garage building at 45 Arch street for its own trucks and cars.

BROOKLYN, N. Y.—The Hilo Varnish Co., 443 Marcy avenue, is inquiring for structural steel for a 7-story factory building.

BUFFALO—American Radiator Co., M. R. Widle manager, is having plans drawn for an addition to its malleable foundry, one story, 100 x 300 and 100 x 330 feet, at 1807 Elmwood avenue.

NEW YORK—Franklin Brass Foundry has been incorporated with $10,000 capital by B. Groberg and R. M. Bernheim. D. Groberg, 861 Manhattan street, Brooklyn, is attorney.

CINCINNATI—Reedy Elevator Mfg. Co. has been incorporated with $5000 capital by Charles Reedy, M. B. Reedy, F. Reedy, William Guckenberger and Victor E. Murray.

CLEVELAND—Apex Metal Products Co. has been incorporated with $500 capital by Sidney Galvin, Alex Miller, Harry Resnick, J. Miller and Louis Miller.

BLACKWELL, OKLA.—Acme Foundry & Machine Co., E. L. Graham general manager, has leased building and will build three others to house new foundry and machine shops.

CARDIN, OKLA.—A. Beaver Mining Co. will build an ore reduction mill with pulverizing machinery, 160 x 270 feet, to handle zinc ore.

OKMULGEE, OKLA.—Shrefts Supply Co., capital $50,000, has been incorporated by H. B. Shrefts, 1100 North Alabama street, Blanche Shefts and A. I. Shefts to deal in oil well supplies and machinery.

TULSA, OKLA.—Mutual Tool Co. has been incorporated with $60,000 capital by R. F. Garland, Atlas Life building.

TULSA, OKLA.—Wertzberger Derrick Co. has been incorporated with $50,000 capital by D. D. Wertzberger, Mid-Continent building, and associates.

TULSA, OKLA.—Choctaw Coal Co., capital $20,000, has been incorporated by J. H. Eng-

land, W. B. Blair and W. P. Nelson to engage in coal mining operations. Nelson & Blair, Palace building, are company attorneys.

TULSA, OKLA.—Economy Pump Co., capital $10,000, has been incorporated by George A. Gage, 105 South Wheeling street, M. L. Gage and C. C. Parsons to deal in and manufacture a line of specialty pumps.

EUGENE, OREG.—Southern Pacific railroad will build an 18-stall locomotive house and machine shop. Is now building a tie creosoting plant here.

BRADFORD, PA.—Midwest Steel & Supply Co., J. Hillstrom, general manager, is having plans made for an addition to its manufacturing plant and an office building.

ELMWOOD CITY, PA.—Plympton Refrigerator Co. has been incorporated with $50,000 capital to manufacture refrigerating systems and accessories by Roy H. Hamilton, 706 Wayne avenue, R. A. Plympton and D. C. Hamilton.

GROVE CITY, PA.—Bessemer Gas Engine Co., J. P. Henry superintendent, will install considerable equipment in its addition now being completed.

HATBORO, PA.—Roberts-Mander Stove Works will build one or two additional buildings at its plant to increase production.

HATBORO, PA.—Roberts-Mander Stove Co. is building addition to enlarge production of plant at Northampton.

OIL CITY, PA.—Superb Radiator Co., Youngsville, has been bought by J. C. Black and the plant and equipment are being removed to Oil City. A new company is to be incorporated to take over the business.

PHILADELPHIA—Bids were closed Feb. 9 for a substation for the Philadelphia Electric Co., at 3434 Kensington avenue.

PHILADELPHIA—Kramer Auto Radiator Works, 246 Perry street, manufacturer of automobile radiators and sheet metal products will build a 1-story plant 110 x 120 feet.

PHILADELPHIA—Plans have been prepared by S. A. Stoneback, architect, this city, for a mill for the Primrose Tapestry Co., Kensington avenue and Buckius street.

PHILADELPHIA—The Franklin Sugar Refining Co. has awarded a contract for a $20,000 boiler house on Meadow avenue, to the Rust Engineering Co., Pittsburgh.

PHILADELPHIA—Philadelphia Electric Co., Tenth and Chestnut streets, will build a 1-story machine shop to care for its own equipment.

PHILADELPHIA—The Philadelphia Rubber Works is building an addition, contract for the structural steel for which has just been awarded to the Fort Pitt Bridge Works.

PHILADELPHIA—Bids were closed Feb. 2 on a mill building for the Art Craft Silk Hosiery Mills, Kensington avenue, north of Carey street.

PHILADELPHIA—Work on a $50,000 machine shop at Twenty-sixth and Christian streets, will be started at once by the Philadelphia Electric Co., 100 Chestnut street.

PHILADELPHIA—H. W. Butterworth & Sons Co., Cedar and York streets, manufacturer of machinery and parts, will build a 1-story addition, general contract being awarded to John R. Erbe, 2551 North Sixth street.

PHILADELPHIA—Iroquois Electric Refrigeration Co., 1600 Arch street, has been incorporated with $100,000 capital to market refrigerating machinery manufactured by the Barber Asphalt Co., Buffalo, N. Y.

PHILADELPHIA—The Philadelphia Electric Co. is having plans prepared by John P. Windrim, architect, for two sub-stations, one at Juniper and Waverly streets and the other at Nineteenth and Oxford streets.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 45.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	43.00 to 46.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00 to 48.00

PHILADELPHIA—I. Fischman & Sons have been incorporated with $10,000 capital to manufacture refrigerating machinery, soda fountains, carbonators and supplies, by Harry Fischman, Bailey building, and brothers.

PHILADELPHIA—Miller & Fenton Inc. has been incorporated with $50,000 capital to manufacture precision and scientific instruments by Ashbridge Sharpless, 1501 Walnut street, Thomas Cancelmo and Frank Muller.

PHILADELPHIA—Fow Mfg. & Supply Co. has been incorporated with $75,000 capital to manufacture sheet metal specialties and heating and plumbing supplies by Fred Fluck, 554 Locust avenue, Robert T. Garrett, 646 North Forty-third street and Nathan Fow, 2552 North Thirty-second street.

PITTSBURGH—Homestead Lamp Mfg. Co. has been incorporated with $10,000 capital to manufacture lamps and accessories by Walter R. Schuchman, 134 Sixth avenue, Homestead, Pa., Alexander Elsaesser and R. E. Pollano, 419 Grove street, Pittsburgh.

PITTSBURGH—Equitable Meter & Mfg. Co. has been incorporated with $1,500,000 to take over the Equitable Meter Co. and the Pittsburgh Model Engine Co. Production will be concentrated in the Homewood works of the latter company, which will be much enlarged.

GREENVILLE, S. C.—Victoria Monaghan Cotton Mills, A. H. Cottingham general manager, interested in plant to be established here to manufacture special machinery for textile mills.

HURON, S. D.—Great Northern railroad Fifth and Jackson streets, St. Paul will build railway extension from Huron, S. D. to Alliance, Neb. via Rosebud Indian reservation.

SIOUX FALLS, S. D.—Bids will be received Elinor H. Whiting, secretary of board of charities and corrections, Pierre, until Feb. 4, for a steam boiler of 150 horsepower with auxiliary equipment at the state penitentiary, Sioux Falls.

FORT WORTH, TEX.—Trinity Valley Iron & Steel Co., 1002 Jarbis street, will build two structures at Camp Bowie, 43 x 138 and 30 x 86 feet, two stories.

PLAINVIEW, TEX.—Texas Utilities Co. has bought the light and power plants of the Lamb County Utilities Co. at Sudan and Amherst and has obtained a franchise for a plant at Muleshoe. Power lines will be extended to all these towns.

SEATTLE—Northwestern Sheet Metal Mfg. Co. is building a plant at Colorado avenue and Spokane street, two stories, 22,000 square feet of floor space.

HUNTINGTON, W. VA.—Mitchell Tractor Co. has been incorporated with $125,000 capital by Fred E. Reed, Jr., 2543 Collis avenue and others to manufacture a farm tractor.

FOND DU LAC, WIS.—The Louis Voell Auto Co. will spend about $60,000 in the construction and equipment of a new garage and service building, 100 x 200 feet, with a wing, 50 x 100 feet. Plans are being completed by Architect A. W. Hoffman, 86 Wisconsin street, Milwaukee.

LONDON (Dane Co.), WIS.—Febocke & Nettestad, automobile dealers, have awarded contracts for a new garage and repairshop, 60 x 100 feet, to cost about $25,000.

MILWAUKEE—Liberty Bell Antennae Corp. has been incorporated with $50,000 capital to manufacture a new type of radio antenna by Robert Barnett, Aaron E. Goldman and Alfred C. Gute.

MILWAUKEE—Empire Level Mfg. Co. has been incorporated with $50,000 capital to manufacture spirit levels, tools and mechanical devices for woodworking and metalworking trades by Henry Zieman, Harry J. Zieman and Lillian Zieman, 463 Twenty-sixth avenue.

Milwaukee—The newly organized Forest Home-Chevrolet Co., 970 Forest Home avenue, automobile dealers, will build a $50,000 garage and service building, 52 x 100 x 165 feet, part 2-story, according to plans by Architects Siebert & Kegler, 230 Grand avenue. A complete shop equipment will be purchased.

MILWAUKEE—Bids are being taken by the Red Star Yeast & Products Co., 79 Buffalo street, Milwaukee, for the complete new refrigerating machinery for the cold storage rooms of its plant at Twenty-seventh street and the viaduct, where remodel and enlargement work costing about $200,000 is under way. E. R. Liebert, 49 Oneida street, is the architect in charge, with Calhill & Douglass, 217 West Water street, associated as mechanical engineers.

WEST ALLIS, WIS.—Wehr Steel Co., Forty-fifth and Gordon avenue, will build a 1-story foundry 160 x 200 feet.

Business in Canada

CALGARY, ALTA.—The Calgary Power Co. proposes to spend $100,000 on two new banks of transformers at its Horse Shoe Power plant, according to a statement just made by A. G. Gaherty, chief engineer and managing director, to increase capacity from 25,000 to 28,000 horsepower, to be completed by September.

NEW WESTMINSTER, B. C.—The Westminster Iron Works is having plans prepared for addition to its plant here.

PORT ALBERNI, B. C.—The Alberni Engineering Works has started extensive additions and alterations to machine shops and shipyards here, including a marine railway.

VANCOUVER, B. C.—The British Columbia Electric Railway will let several contracts in connection with proposed automatic substation at Fifth avenue and Fir street. Equipment will be purchased.

VICTORIA, B. C.—The Murdie Machine shops plans to build a machine shop and shipyard on Indian Reserve here. Bids are now being called for erection of machine

New Construction and Enterprise

shop and equipment. Contracts for cranes will be awarded later.

WINNIPEG, MANN.—The Manitoba Power Co. plans installing two new turbines in power plant to take care of increased power demands in this district.

WINNIPEG, MAN. — Ratepayers will be asked to vote on a by-law to authorize the expenditure of about $6,000,000 for the building of a power plant at Slave Falls, Man. J. G. Glassco is manager of the Winnipeg Hydro system.

ST. BONIFACE, MAN.—The Western Steel Products Ltd., Desautels street, has started construction work on $30,000 addition to its plant here.

COLLINGWOOD, ONT.—Daniel Shaw has started work on an addition to sawmill here and will purchase equipment.

FORD CITY, ONT.—The town council is considering the installation of an auxiliary electric plant in connection with filtration plant. J. F. Foster is clerk.

KAPUSKASING, ONT.—The Spruce Falls Pulp & Paper Co., which is controlled by the Kimberley Clark Co., of Neenah, Wis., propose to spend $15,000,000 on pulp and paper mills in the vicinity of Smoky Falls in northern Ontario, and also to build a logging railway from Kapuskasing to Smoky River. The plant which will have a daily capacity of 500 tons will be started in the immediate future.

KIRKLAND LAKE, ONT.—The Sylvanite mine contemplates installation of a mill here.

LISTOWEL, ONT.—The public utilities commission, C. Prouter, engineer, proposes to install gas engine in connection with waterworks plant.

LONDON, ONT.—Kelvinator Corp., Detroit, manufacturer of refrigerating machinery, is establishing a Canadian branch under the name of Kalvinators of Canada Ltd. to take over the business of its Canadian agency at London, Ont. A plant will be established.

TIMMINS, ONT.—The Hollinger Mining Co. will enlarge its mill to bring capacity to 8000 tons per day. Orders will be placed at once for three additional rod mills, which will add about 3000 tons to present capacity.

TORONTO, ONT.—McColl Bros. announce they will double the capacity of their oil refining plant here during the present year, bringing capacity to 3000 barrels per day.

DRUMMONDVILLE, QUE.—The American Cellulose & Chemical Co. proposes to establish a plant here on which construction work will be started soon.

MONTREAL, QUE.—The two-story machine shop owned by H. E. Bourassa, 4 Harbor street, was destroyed by fire which started in the forge department, with loss to building and equipment of $25,000.

ST. PAULIN, QUE.—The Quebec Streams commission, 59 Notre Dame street east, Montreal, Que., will call for bids early next spring in connection with water power development plant here.

New Trade Publications

ABRASIVES—Artificial abrasives and their manufacture are described in a booklet issued by the Norton Co., Worcester, Mass.

BOLTS AND NUTS—Milton Mfg. Co., Milton, Pa., has issued a current catalog of its products, well indexed and covering full information as to sizes and varieties.

OIL PUMP—A pump using an unusually long stroke is described in a circular by Wilson-Snyder, Pittsburgh, designed especially for oil lines. A diagram shows the principle of its operation and a list of users is given.

TOOL GRINDERS—Gallmeyer & Livingston Co., Grand Rapids, Mich., has issued a bulletin illustrating its cutters and tool grinders, with full details of construction and operation.

PRESSURE BLOWERS—American Blower Co., Detroit, presents in a current bulletin its pressure blowers and exhausters, with engineering data and full details of construction and operation.

AIR ECONOMIZERS—New developments in air economizers with removable reversible chambers and lead coated steel tube economizers to resist corrosion are shown in a bulletin by the B. F. Sturtevant Co., Boston.

REAMERS—Chicago Pneumatic Tool Co., New York, has issued a folder describing its new portable electric reamer. The reamer is made in three sizes and will ream holes from 15/16-inch to 1 5/16-inch.

SCALES—Toledo Scale Co. has issued a number of its house organ devoted to repeat orders from its important customers, indicating satisfaction with earlier purchases. The varied uses to which the scales are put in industrial plants are also illustrated.

CHAIN HOISTS—Ball bearing electric chain hoists are described in the folder issued by the Yale & Towne Mfg. Co., Stamford, Conn. These hoists are made with push button or manual control and may be had with hook attachment or trolley type.

SAFETY GUARDS—A wide variety of uses for which the Cutter Sheet Metal Mfg. Co., Cleveland, makes guards to promote safety is indicated in a current bulletin by that company, half tones of installations giving graphic realization of their utility.

FURNACES—A water-cooled furnace which is said to eliminate wall maintenance and increase boiler capactiy is described in a catalog issued by the Combustion Engineering Corp., New York. Diagrams showing its application to present boiler installations are given.

GEARS—A catalog of its products, gears in all forms, worm gear speed reduction units and chain has been issued by the Grant Gear Works, South Boston, Mass. Considerable engineering data in relation to gears is also presented.

PATTERN SHOP—Everything for the pattern shop is shown in a catalog issued by the Kindt-Collins Co., Cleveland. Equipment such as saws, planers, sanding machines, etc., and the numerous supplies are described. The catalog is well illustrated.

BETTER PACKING—A bulletin by the Acme Steel Co., Chicago, illustrates advantages from using its nailless packing strip on boxes and bundles to assure safety and avoid breakages. Accessories for application of the strap are also shown.

STEAM SHOVELS—Under the intriguing title "Crowding the Blasting Crew", the Marion Steam Shovel Co., Marion, O., has issued a bulletin presenting pictorially the use of its shovels to handle material in the lime, stone and cement industries.

GRAPHIC INSTRUMENTS—Use of recorders to aid in accurate setting of circuit breakers and overload relays for the protection of electrical machinery is described and illustrated in a bulletin by the Esterline-Angus Co., Indianapolis, Ind.

METALLOGRAPHIC EQUIPMENT—Permanent alignment of microscope and illuminating unit is described in a bulletin issued by the Bausch & Lomb Optical Co., Rochester, N. Y. Details of construction and operation of this and other metallographic equipment are given.

DRILLS AND GRINDERS—Portable electric drills and grinders are shown in a catalog published by the United States Electrical Tool Co., Cincinnati. Grinders of the floor stand and lathe attachment types are shown also. The drills are in several sizes from ¼-inch to 1½-inch.

MACHINE TOOLS—Twenty pages listing machine tools, plus a few editorials on equipment and business philosophy are contained in a pamphlet recently issued by the Reliance Machinery Sales Co., 1407 Brighton road, Pittsburgh, machine tool dealer. Illustrations of typical tools and a double spread showing a 72-inch by 72-inch by 18-foot planer add interest to the publication.

REAMER—Chicago Pneumatic Tool Co., New York, has issued a bulletin describing a new type of reamer designed to meet the demand for a portable electric reamer of light weight and much power. A diagram illustrates details of construction and much information is offered.

CHUCKING WORK—A pamphlet by the Jones & Lamson Machine Co., Springfield, Vt., is the third in a series dealing with problems of the machine shop and how they may be met by use of the company's equipment. It is well illustrated and contains much in the way of suggestion for improving shop practice.

PNEUMATIC CONVEYING—Carrying lead slugs and other heavy waste by means of an air current is described in a bulletin by the Niagara Blower Co., Buffalo, N. Y. The description is based on equipment developed for use in storage battery plants and is applicable also to other uses.

PUMPS—Various uses to which its pumps may be adapted are suggested and illustrated in a bulletin by the Goulds Mfg. Co., Seneca Falls, N. Y. Exacting demands made on pumps by mines, quarries, gravel plants and construction work are being met by this company's lines and halftones show how it is done.

NICKEL STEEL—The International Nickel Co., New York, has issued two bulletins on the data and application of nickel steel. One covers the standard specifications of the S. A. E. and includes that of steel castings. The other gives the physical and mechanical properties of nickel steels. These bulletins are part of a series of technical articles prepared by this company.

VENTILATING SYSTEMS—That the condition of air surrounding the worker in an industrial plant has an important effect on his output and that the proper conditioning of the air can prevent production losses is the argument presented in a reprint of a paper by a staff engineer of the American Blower Co., Detroit, issued by that company. Graphs of seasonal variation in production and the effect of moisture on production are presented and interior views of a plant with proper equipment for putting air in proper condition.

Warehouse Demand and Prices Steady

Buying Fluctuates but Generally Gains— New York Slow

BUYING of iron and steel products from warehouses is fluctuating but generally good. New York continues the dull spot of the present market, bad weather slowing demand. Prices are firm and show few changes.

Severe winter weather in the New York metropolitan district served to retard jobbing business the past few days. Business is in moderate volume and prices throughout the list are unchanged. Perhaps products hardest hit by recent conditions are structurals and reinforcing bars.

Warehouse demand at Pittsburgh still is lively and February's total tonnage is expected to exceed that of January. Prices remain unchanged.

Buffalo warehouse demand holds steady with iron and steel purchases at the beginning of this month slightly above the average for the season and prospects regarded as good for spring business. Sheets continue the most active sellers with a fair movement of practically all other materials. Prices are steady.

Demand for iron and steel goods from St. Louis warehouses is holding up in excellent shape, with virtually all classes of consumers participating in the buying movement. Improvement is noted in demand for building materials in the South. Prices are unchanged on the principal products although an easier trend is noted on wire and wire products.

Philadelphia jobbers report business is fair but not quite as good as was expected. The steel and iron bar minimum now is disappearing and it is difficult to shade 2.90c. Other prices are steady.

Further improvement of demand for iron and steel warehouse products is noted at Detroit since Feb. 1. Tonnage being moved is large.

Manufacturers are buying somewhat cautiously and not far in advance. Prices are firm and unchanged.

Iron and steel warehouse demand at Cleveland generally is better than to the same date in February. Buying is increasing in number and size of orders. Prices show some weakness although no changes have been made in list quotations, the bulk of tonnage moving going at the full price.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.05c
New York	3.24c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	2.90c to 3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c
Cincinnati	3.30c
Cleveland	2.40c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.00c to 3.25c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.05c
New York	3.34c
Philadelphia	2.70c to 3.10c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.75c to 3.05c
Philadelphia, 3/16-inch	2.90c to 3.20c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.50c
San Francisco	3.75c
Seattle	4.50c
St. Louis	3.60c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.60c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	4.10c
Detroit	4.25c
Los Angeles	4.75c
New York	4.30c to 4.35c
Philadelphia	4.60c to 4.65c
Portland	5.25c
San Francisco	4.75c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.35c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.90c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.25c
Detroit	5.50c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.35c to 5.50c
Philadelphia	5.85c
Portland	6.25c
San Francisco	6.00c
Seattle	6.50c
St. Louis	5.70c
St. Paul	5.60c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	3.90c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City

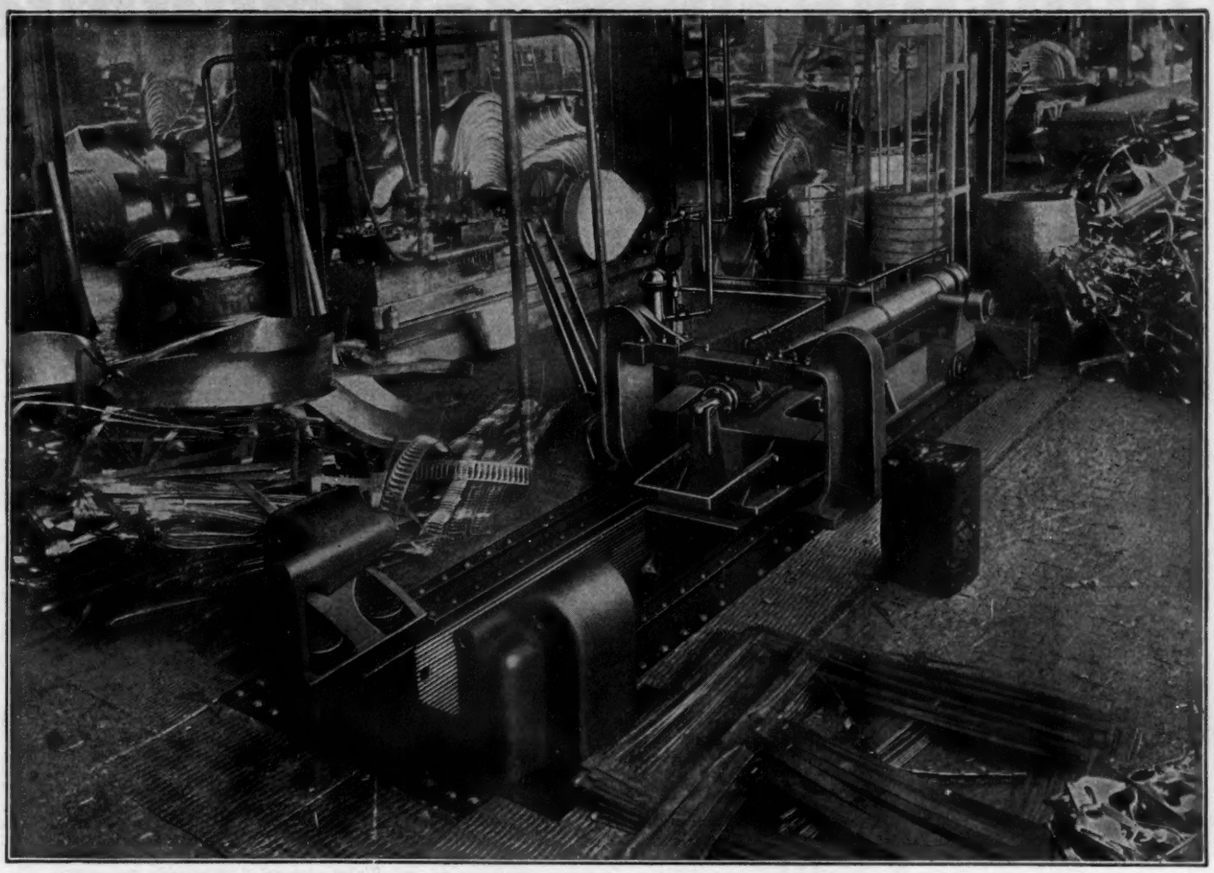
Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 8	+16



Typical Installation in Well-Known Automobile Plant

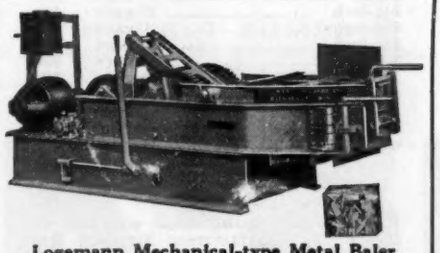
WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.



Logemann Mechanical-type Metal Baler

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount of $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	12½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	33	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

TREADS AND COUPLINGS		
Butt weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon	application
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)	
2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON	
1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN	
1-inch	56 off
1¼ and 1½-inch	48 off
1¼-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off
SEAMLESS HOT ROLLED	
2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$ inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Chekered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

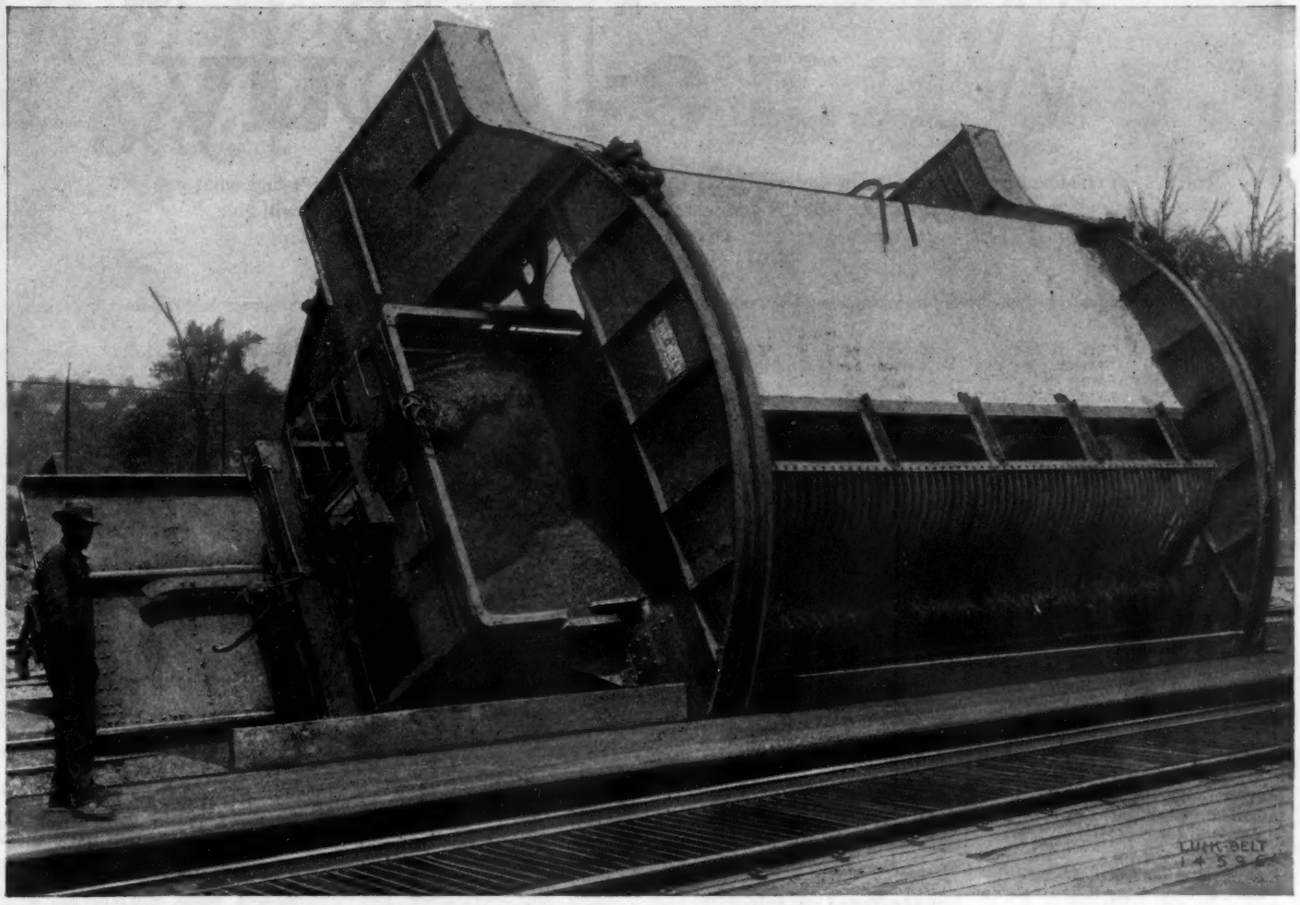
Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

Simplicity–Speed–Reliability



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Union Light & Power Co., St. Louis (Cahokia)

Columbus Ry., Light & Power Co., Columbus, Ohio

Sloss Sheffield Steel & Iron Co., Birmingham, Ala.

Jones & Laughlin Steel Co., Pittsburgh, Pa.

Duquesne Slag Products, Pittsburgh, Pa.

HERE is the famous Link-Belt Rotary Car Dumper which is giving such splendid results in the rapid and economical dumping of materials. A study of its many features will interest every man who unloads coal in quantities of ten or more cars a day.

The Link-Belt Rotary Car Dumper is low in initial, operating and maintenance cost; simple in operation; of rugged construction; low in power consumption; flexible, in that it will handle equally well, cars of all types and sizes; high in capacity, to meet the requirements of both the large and small consumers; and easily adapted to old as well as new plants.

Send for Link-Belt Gondola Car Dumper Book No. 804.

LINK-BELT COMPANY 2443

Leading Manufacturers of Elevating, Conveying and Power Transmission Chains and Machinery

PHILADELPHIA, 2045 Hunting Park Ave. CHICAGO, 300 W. Pershing Road INDIANAPOLIS, 200 S. Belmont Ave.

Offices in Principal Cities

LINK-BELT

ROTARY CAR DUMPER

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

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Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Browne, deCourcy, Inc., 8 West 40th St., New York City
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, New York.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pollak Steel Co., Cincinnati, O.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

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Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

BARS (Alloy)
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Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

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Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
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Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Pollak Steel Co., The, Cincinnati, O.
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Truscon Steel Co., Youngstown, O.

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Lockhart Iron & Steel Co., Pittsburgh, Pa.
Milton Mfg. Co., The, Milton, Pa.
Morris, Wheeler & Co., 30 th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

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Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
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Inland Steel Co., First National Bank Bldg., Chicago, Ill.
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Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Pollak Steel Co., The, Cincinnati, Ohio.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
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Youngstown Sheet & Tube Co., Youngstown, O.

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BASKETS (Wire)
Meyers, Fred J., Mfg. Co., The, Hamilton, O.

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Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
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Snead Architectural Iron Works, Louisville, Ky.

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BEARINGS (Mill Alloyed)
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Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

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Williams, I. B., & Sons, Dover, N. H.

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Williams, I. B., & Sons, Dover, N. H.

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BELTING (Leather)
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Williams, I. B., & Sons, Dover, N. H.

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Vaughn Machinery Co., The, Cuyahoga Falls, O.

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Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Wickes Brothers, 320 Water St., Saginaw, Mich.

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Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

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Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

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Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., The, Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

BLANKS (Ring, Gear and Sprocket)
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Ingersoll-Rand Co., 11 Broadway, New York City.
Spencer Turbine Co., Hartford, Conn.

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